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Facilitating citizen participation in education decision making through an iterative assessment of citizen opinion.

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FACILITATING CITIZEN PARTICIPATION IN EDUCATIONAL DECISION MAKING THROUGH AN ITERATIVE ASSESSMENT OF CITIZEN OPINION

A Dissertation Presented

By

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EDUCATIONAL DECISION MAKING THROUGH

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DEDICATION

To the memory of my father for his quiet strength and early support, and to my mother for her continuing pride in my achievements---both are sources of my inspiration.

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To my family, Carolyn, Kevin, Kyle and Kimberly, I sincerely offer my love and appreciation for your encouragement and patience during this undertaking. I owe you a great deal for the sacrifices you have made in order for your husband and father to complete this task.

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FACILITATING CITIZEN PARTICIPATION IN
EDUCATIONAL DECISION MAKING THROUGH
AN ITERATIVE ASSESSMENT OF
CITIZEN OPINION
(April, 1977)

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A B S T R A C T

The erroneous assumption that the concept of participatory democracy is fully operational within the educational complex is, at least in part, partially responsible for the difficulties educational administrators and planners have keeping abreast of and dealing effectively with citizens' opinions regarding key issues in education.

The central question of this study is whether the strategy of an on-going assessment of citizen opinion can bring about greater participation by citizens in the educational decision making process. Further, the study investigates the merits of the Delphi Technique as an effective means for accomplishing this on-going assessment.

The preliminary discussion focuses on the origin of the Delphi and its technological and social science applications. By citing examples of how this technique has been employed in other contexts and for other purposes, much is revealed about its general flexibility and adaptability. At the same time, important observations are made regarding some of the problems one might face in designing and using this technique.

In carrying out this study the Delphi Technique was employed in the design of a survey instrument that systematically solicited citizens' opinions and judgements as to the timing and impact of important changes anticipated in higher education in the state of Connecticut. This survey can be viewed as a follow-up on the activities of almost 300 educators and citizens who played instrumental roles in the development of the Connecticut Master Plan for Higher Education.

The study provides a detailed profile of the survey population, followed by a summary of the population's collective estimates of the timing and impact of fifteen higher education changes culled from the previously developed Master Plan recommendations. This summary is then followed by a comparison of the population's estimates across rounds and across subpopulation groups. Five specific study objectives and related hypotheses are employed to clarify the approach to and the interpretation of the data analysis.

In terms of the timing and impact estimates for the fifteen higher education changes, the study found that there were no signifi-

cant differences between the mean responses of the High and Low Authority groups in either Rounds I or II. Also, a statistical comparison of the mean responses of the entire population as a whole showed no significant differences between the first two rounds. However, further analysis showed that 93% of the 30 group estimates decreased in variability from the first to the second rounds of the Delphi Survey. In addition 57% of these decreasing variances were statistically significant at the .05 level.

The study also found that "students" were seen by the panel as the overall promoters of the higher education changes cited in the study. The "faculty" were identified as the overall hinderers of these changes. Finally, the study shows that 20% of the Delphi panelists not only responded to the survey questions, but also took advantage of the opportunity to write specific comments about their responses. Basically, these comments dealt with the participants' reasons for having responded outside the interquartile range of responses of the rest of the panel.

As a result of this investigation the author concludes that an on-going assessment of citizens can indeed aid in the facilitation of citizen participation in educational decision making, and that the Delphi Technique is an effective strategy for accomplishing that on-going assessment.

Finally, the entire study is concluded with two brief discussions aimed at helping the reader to "consider the future" in terms of the

use of the Delphi Technique in education. First, it is pointed out that the nature of Delphi survey data is such that an initial study like the one here can be expanded upon through the use of other future studies methods, such as the Cross-Impact Matrix. Secondly, a point is made regarding the potential benefit of utilizing the Delphi Technique and survey method in the investigation of key issues emanating from education's "lower division", the public elementary/secondary school complex. By way of example, the author briefly describes a Delphi-based survey strategy which is designed to solicit citizen opinion regarding the impact of declining enrollments on the budget making process in a public school system.

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SOME PRELIMINARY OBSERVATIONS

Participatory Democracy in Education

It has long been the assumption that participatory democracy is the underlying principle of the socio/political processes operating within the American society. Stated differently and, perhaps, more accurately, collective self-determination among its people has long been one of America's most professed values; one upon which the establishment of our major institutions and traditions has been based. No doubt, future history will reveal that one of the most significant indicators of our socio/political growth as a nation will have been the extent to which we were successful in actualizing this value---moving it from the professed level to an operational level within our society.

The misconception on the part of many that we are indeed close to achieving a fully functioning model of participatory democracy is one of the major causes of public discontent and general dissatisfaction with what seems to be a tendency toward increasing complexity, remoteness and inhumaneness of our social, political and economic institutions. The idea that ordinary citizens should have ample access to and substantial influence over the activities of the republic has been the motivation behind many recent efforts to incorporate into the "system" a variety of mechanisms for citizen participation or

involvement. Even in light of these efforts there seems to be little abatement in the general public frustration with the unresponsiveness of our institutions. Reasons for this state of affairs are suggested by Edgar and Jean Cahn:

1. Life has become more complex, society more fragmented, our next door neighbors strangers.

2. The functions of government have multiplied and expanded beyond the citizen's control and comprehension.

3. Cleavages of race, class and region seem to threaten the very foundations of our national being.

4. An urban, industrial society has at once rendered existence impersonal, and challenged the meaning of our federal system and personal existence itself.

5. The radical expansion of governmental functions, powers and programs requires redefinition of the meaning of genuine enfranchisement in a democracy.

6. Increased expertise, specialization and professionalism all pose a peculiar threat to a democratic credo which rejects government by an elite and vests ultimate authority in the citizen.[1]

This last reason, "increased expertise", is reflective of our swift advancement through an industrial and into a post-industrial society, where technological demands are primarily responsible for mounting specialization and a tendency toward elitism among managers, administrators and planners in public and private organizations. At first glance, this trend toward elitism among this group seems like a bold denial of the professed value of participatory democracy.

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[1]Edgar S. Cahn and Jean C. Cahn, "Maximum Feasible Participation: A General Overview," Citizen Participation: Effecting Community Change, eds. Edgar Cahn and Barry Passett (New York: Praeger Publishers, 1971), Part I, p. 9.

Indeed, it is a denial, but it is not bold. These "experts" do have a concern, and often heatedly debate their choices and priorities, regarding the public good. However, the average citizen is seldom privy to this debate, sees little evidence of this concern and, certainly, has little opportunity to offer advice. One of the illusions of our "suave technocracy", in the words of Theodore Roszak, is our capacity "to accommodate much divergence---but, without significantly redistributing power or changing the direction of mainline social policy."[2]

Education's Upper Division. A good example of how experts can maintain the status quo in the midst of change can be seen in the trend toward non-traditional or external degree programs in higher education---the upper division of the education complex. The "open university" and "communiversity" concepts, spearheaded by students during the late 1960's, have become the important keywords for higher education administrators and planners who find a need to make their institutions more relevant. The "great debate" that raged within academia during the early 1970's very seldom included lay persons in any significant way. Speaking at a higher education conference in Chicago in 1972, Samuel B. Gould, chairman of the Commission on Non-Traditional Study said:

> If diversity has been one of the great strengths of American education in the past (and I believe it has been), then we need

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[2]Theodore Roszak, Where the Wasteland Ends, (New York: Doubleday, 1972), p. 40.

> an equally, or perhaps more fully, developed diversity as we create non-traditional opportunity. This does not mean working in adademic isolation.[3]

The nature of this statement and the context in which it was made makes it quite clear whom Gould meant by his reference to "we". For, immediately following this statement, Gould suggested a procedure for examining the merits of the non-traditional concept:

> The educational debate is...more productive when it starts with the aims and objectives of the institution itself and when a great part of it takes place on the campus itself or on the campuses of a group of institutions close to each other physically and philosophically.[4]

Neither here nor anywhere else in his speech did Gould recognize the importance of citizen participation or the involvement of other constituencies in the initial decision making processes surrounding the introduction of non-traditional studies in higher education.

Education's Lower Division. By the end of the 1960's and the beginning of the 1970's, a few educators and many citizens began to seriously doubt the effectiveness of our public secondary school systems. Increasingly, parents and advocates began to turn toward the concepts of participatory democracy and community involvement in order to make the schools more accountable to the public at large. Many were saying that education was everyone's affair, not just the professionals and the traditional vested interest groups.

To a large extent this trend toward closer examination of school

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[3]Samuel B. Gould, Less Talk, More Actions (The Dangers and Possibilities of the External Degree), A speech delivered to the Annual Conference of the American Association for Higher Education (Chicago: The Conference, 1972), pp. 5-6.

[4]Ibid.

operations by citizens stimulated a variety of defensive reactions by many educators. For example, it was during this period that Myron Lieberman offered his perception of citizen participation in education by setting forth thirteen recommendations which essentially restricted the layman to serving the school, rather than having the school serve the layman. The following excerpts are representative of Lieberman's recommendations:

1. Local control of education by laymen should be limited to peripheral and ceremonial functions of education...

2. Laymen can ordinarily make their most valuable contribution to public education in their noneducational organizations...

3. Laymen should support proposals to give teachers more authority over students and over parental behavior relating to school problems...

4. Citizen participation, like the work of the teachers, needs to be evaluated periodically and critically...Citizens'... participation and influence upon the school program is often the cause rather than the result of ineffectiveness.

5. ...Everyone has a stake in clear cut delineation of parental, public, and professional authority in public education...

6. Laymen who become active in the field of public education should bear in mind the fact that the worst evils of public education are more often due to teacher acquiescence in public opinion than teacher resistance to it.[5]

Change and Accountability in Education

The tendency toward a reliance on "expertise" and "professional authority" in the operation of social institutions has a direct influence on the extent to which citizens are able to participate in

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[5]Myron Lieberman, "Educational Controls and Citizen Participation," Educational Issues in a Changing Society, eds. August Kerber and Wilfred R. Smith (3rd ed., Detroit: Wayne State University Press, 1968), pp. 312-15.

the decision making processes of these institutions. Indeed, in education the steady disenfranchisement of the public's authority over what happens in our schools and colleges has paralleled the growing complexity of these institutions and the tendency toward effecting institutional change through what Rogers and Shoemaker call "authority innovation-decisions":

> Authority innovation-decisions are those forced upon an individual by someone in a superordinate power position...The individual is not free to exercise his choice in the innovation-decision process. He is forced by someone with more authority in the social system to adopt or reject the innovation.[6]

It is clear that change and innovation in education occur most often through the process described above. Using Rogers and Shoemaker's terminology, the function of citizens in the innovation process is that of the adoption unit; that is, that group which adopts or uses the innovation. Educational administrators or professionals, through their Boards of Education or Boards of Trustees, function as the decision units, making the final decision as to whether the adoption unit will adopt or reject the innovation.[7]

Another way to look at this phenomenon is through the economically oriented consumer movement, where educational professionals function as the suppliers and citizens become the indirect or direct beneficiaries of the services offered by the suppliers. However, unlike truly public utilities, schools and colleges tend not to be

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[6]Everett M. Rogers and F. Floyd Shoemaker, Communication of Innovations: A Cross-Cultural Approach (2nd ed.; New York: The Free Press, 1971), p. 301.

[7]Ibid., p. 302.

democratic institutions, offering services or satisfying needs without forcing dependence upon themselves. (For example, public transportation, when available, might be called a truly public utility as long as people have access to it at their option or initiative and is in no way obligatory.)

To be sure, there are a variety of ways citizens can influence the operation of their schools and colleges. However, most of these methods are not legally or formally recognized by the power holders within the education complex. Basically, public initiated change occurs in two ways; 1) through advocacy movements designed to gain the attention of the power holders and/or to quickly slow down or stop the operation of those programs deemed undesireable, and 2) through the long-term, gradual withholding of public resources from the institutions themselves. Both methods are necessitated by what might be called a one-way accountability pattern which operates between the consumers and suppliers of educational services. Here one group holds the other accountable for fulfilling certain responsibilities that the second group is either unwilling to assume or is unaware that it has an obligation to do so.

For example, Cyril D. Tyson cites a typical case of one-way accountability patterns operating between universities and communities located in urban areas. He suggests that the situation described below has often resulted in community groups refusing to allow the university "on their turf", or placing such unrealistic demands on the university that specific program implementation becomes a virtual impossibility:

> Universities utilized the poverty communities as laboratories for their graduate and undergraduate students who would study and analyze and write dissertations on specific problems that beset those communities. In no way did the university, politically or as an organized institution, view itself as having any responsibility to provide leadership that would direct the bringing about of basic changes in the life of the residents. Aside from the resources inherent in the variety of disciplines they housed, they did not relate, even in the most narrow context, to the educational problems of their neighboring communities.[8]

The observations made above regarding participatory democracy, change and accountability in education typify that "state of affairs" in education which has stimulated the author to delve into the problem of inadequate citizen participation in educational decision making. The following Chapters will clarify this problem and outline a specific strategy, based on research results, which is aimed at improving this situation.

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[8]Cyril D. Tyson, "The Relationships Between the University and the Community in the Development of Cultural Pluralism," Cultural Pluralism in Education: A Mandate for Change, M. D. Stent, W. R. Hazard, and H. N. Rivlin, eds. (New York: Appleton-Century-Crofts, 1973), p. 58.

CHAPTER I

STATEMENT OF THE PROBLEM

That the concept of participatory democracy in our educational institutions is far from being fully operational is one of the conclusions we may draw from the ideas discussed in the Introduction. A second conclusion is that the long-term success of educational change and the maintenance of effective accountability relationships between laymen and professionals are significantly minimized by the lack or ineffectiveness of citizen participation in educational decision making. Aside from this "state of affairs", some administrators and other educational personnel too often find themselves with too little information regarding the real desires and opinions of citizens---a situation which increases the probability that their decision making will not be totally responsive to the public's needs.

But, what of the officially appointed or elected Boards who establish policy, allocate resources, and generally oversee the operations of our public schools and colleges? Normally, after the initial appointments or elections, very few of these Boards require their members to maintain "an ear to the ground" regarding the needs of the public in general and/or those of a particular constituency. Actually, widespread representation of constituent interests is usually the hoped-for by-product of efforts to place on these Boards individuals

with differing political, philosophical and, sometimes, social orientations. Yet, no matter how representative an official Board may be, the public has no guarantee that it will have access to the decision making process.

Of course, it is recognized that some administrators find it highly advantageous to receive direct input from the public on key problems, issues or proposals. While some Boards see this as an attempt to circumvent their authority, others see it as an opportunity to "test the water before jumping in." Recently, the most popular method for acquiring this citizen input has been through the establishment of permanent or ad hoc advisory committees. In a 1973 National School public Relations Association report the following statement was made:

> ...school authorities have discovered they have at their disposal an abundant supply of public talent, time and willingness to work. Further, most school people believe this reservoir of public energy and wisdom can be useful to the school system, the community and the children. This usefulness is most often described in terms of "improved two-way communication," "school-community interaction" and "participatory school administration."[9]

However, even this approach raises some problems. For example, somewhat contradictorily, the NSPRA report identifies a variety of problems associated with the involvement of citizens on advisory committees--- some of which are the following:

--Apathy(loss of interest, poor attendance, difficulty of maintaining a high degree of involvement)

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[9]National School Public Relations Association, Citizens Advisory Committees: Public Participation Increases; Guides Change in American Education, A report based on an Education U.S.A. survey (Arlington, Virginia: National School Public Relations Assoc., 1973), p. 5.

--Mechanics of scheduling times and places when everyone can meet

--Amount of time involved

--Domination of committee by a few individuals or by "pressure groups"

--Sticking to the point, keeping discussion productive (not going off on irrelevant, personal, or trivial tangents)

--Need for steady communication, keeping members informed...[10]

It is clear from the foregoing that the major difficulty is maintaining and sustaining the citizen's involvement so that his input can be continuous and on-going. It is also clear that some educational administrators and planners would welcome positive and constructive comments on new program ideas while they are being developed, rather than receiving an avalanche of negative feedback after programs have started. Yet, to do this solely through meetings with citizen's groups could be both time-consuming and inefficient, depending on the nature of the project. In a case like this what may be needed is a procedure for administrators to keep a finger on the "pulse" of the community and, while doing that, promote greater citizen participation. Just how such a procedure can be helpful is the major concern or Central Question of this study. Stated more explicitly, the question is:

> To what extent can an on-going assessment of citizen opinion aid in the facilitation of citizen participation in educational decision making?

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[10] Ibid., p. 14.

Before a conclusive answer to this Central Question can be given, it is necessary that an in-depth investigation be made of a specific procedure for assessing citizen opinion. For the purposes of this study the author has identified the Delphi Technique as the most likely method. Although a more complete description will be given later on in this Chapter, suffice it to say that the Delphi Technique is a survey method which narrows down individual differences of judgement regarding previously identified issues.

It is important for the reader to understand that, although a major portion of this study will focus on the Delphi Technique itself, it should not be inferred that we are primarily concerned with the effectiveness of the Delphi in facilitating citizen participation in educational decision making. No survey or poll, in and of itself, is inherently capable of facilitating participation. More, it is the use of such instruments and their communicative value that creates an environment for participant involvement. The iterative nature of the Delphi Technique is particularly conducive to this possibility. Thus, the Central Question to this study remains as it has been stated above, and to help us derive an answer we must raise a Preliminary Question which asks:

> To what extent is the Delphi Technique an appropriate method for undertaking an on-going assessment of citizen opinion?

An Overview of the Study

The Central and Preliminary Questions of this study will be dealt with primarily through the discussion and research presented in

Chapters II through V. Specifically, Chapter II will review the literature and research done on or resulting from the use of the Delphi Technique. The following Chapter will be a presentation of the study itself, and Chapter IV will reveal the outcomes of the study. Chapter V will conclude the entire discussion of the facilitation of citizen participation through an iterative assessment of citizen opinion. As for the remainder of Chapter I, we will discuss the overall significance of the study, the underlying assumptions, some definitions, and the study's major delimitations. Immediately following is a more detailed overview of Chapters II to V.

A review of the literature on the Delphi Technique will be carried out in Chapter II. Here we will concentrate on the background and history of the Delphi by briefly describing its initial military/industrial use and subsequent adoption by the social sciences in general and education in particular. The next section will focus on the technical aspects of designing a Delphi instrument. For example, the problems of constructing Delphi statements, providing fast and accurate feedback and deciding on the number of response rounds to be used will be briefly explored. The concluding section of this Chapter will review the earlier discussions and will serve as a summary of the direction in which the most important research on the Delphi is going.

Chapter III begins with a discussion of the background and development of Connecticut's Master Plan for Higher Education. This is necessary because of the important role played by those connected with the Master Plan as members of the population from which data for

this study was collected. The remainder of the Chapter will be devoted to the rationale for conducting the study, the objectives, the method, materials and the procedures, and a description of the participating population. In the following Chapter the results and findings of the Delphi poll will be described and summarized.

For the most part, Chapters II through IV deal primarily with the Preliminary Question regarding the appropriateness of the Delphi Technique as a procedure for implementing an on-going assessment of citizen opinion. It is in the last Chapter (V) that we come to some kind of determination as to the extent to which an on-going assessment of citizen opinion can aid in the facilitation of citizen participation in educational decision making. Also, this Chapter will take a look at educational decision making from a future focus, indicating the extent to which "public education" as we know it today is likely to survive with or without improved citizen access to the decision making processes of educational institutions.

The Significance of the Study

Estimating or even pinpointing the significance of a research study is not an easy task for the researcher himself to achieve. Moreover, there is much that can be said regarding the researcher's possible prior biases and initial motivations for conducting the research in the first place. Therefore, it must be said that the most valid conclusions regarding the significance of this present study must ultimately emanate from the reader's impressions of the study's contents. Notwithstanding this problem, the author intends to probe

three areas of probable significance for the study; 1) the planning and implementation of educational programs, 2) the use of "expert" opinion in the Delphi procedure and, 3) the utility of the Delphi in other contexts.

First of all, it is highly probable that, more and more, educational professionals are going to be forced by both external and internal pressures to rely on positive and constructive pre-assessments by laymen in order to guarantee the successful implementation of new programs. This may be even more true for existing programs that require on-going and sustained public support. Feedback from citizens to administrators regarding their opinions on certain issues is not a new concept. What this study does is to identify a systematic procedure for gathering that feedback on a regular basis, as well as to provide some insight on how the process itself can be used by professionals to promote even greater involvement of citizens in educational affairs.

Another way in which this particular study is significant is its liberal interpretation of the term "expert" when it comes to the selection of respondents for the Delphi probe. In short, this study attempts to recognize the "expertise" of the average citizen or layman on a parity basis with others whose professional, educational or even economic credentials are of the kind that allows society to place greater value on their reflections and pronouncements. As will be seen in Chapter II, most versions of the Delphi have been used with populations (although diverse within themselves) whose members all tend to

belong to some common constituency or institution. This study intends to avoid the major aspects of this problem by using a population of individuals with a relatively wide range of social, economic and professional differences, and by giving equal weight to each person's responses throughout the survey.

Finally, it should be noted that all through the designing and implementation of the data gathering materials and procedures it was kept in mind that the greatest value of the Delphi instrument would be in its utility in other situations. In other words, most of the classic features of the Delphi procedure have been used in this study, and the design of the instrument itself is such that it can be used again on other projects with very little need for modifications. Also, there has been a conscious effort throughout this study to promote the use of "open" decision making processes by educational administrators, as a means of closing the delivery/expectation gap between the suppliers and consumers of educational services. If the reader can consider viable any one of the three areas of significance described above, then the author can feel comfortable with the notion that the study was a worthwhile endeavor.

The Underlying Assumptions

The observations outlined earlier in the Introduction should have provided the reader some sense of where the author's thinking began when developing the idea for this study. As a further means for firmly establishing the theoretical and/or philosophical ground on which this study stands, we will identify and review the major

assumptions which underly the study itself. Although these individual assumptions speak to different aspects of the education complex, they should in no way be considered mutually exclusive from each other. In fact, these assumptions should be viewed together for their full import.

The first assumption can be viewed as being related to the overall purpose of educational institutions as they have evolved over the years. Before the establishment of the common school, most educational activities took place in the home, the community and the church. Even after the common school was established, many important aspects of education still took place in these three institutions. However, gradually these institutions began to relinquish their former educational responsibilities (especially in the areas of values and social mores) to the "public schools", so much so that today we see schools being used and held accountable for much more than the intellectual development of the student. It is our assumption that the major responsibility for the socialization, training and overall education of young people will continue to reside more and more in our public schools and colleges.

In the past one could be fairly certain that the educational prescriptions provided by teachers and administrators for students were broadly responsive to the needs of most individuals and to society in general. The primary reason for this was simply that society at that time tended to view "assimilation" as the only legitimate process for the socialization of individuals into a homogeneous

mainstream. Every institution of society, including education, lent much more than credence to this assimilation process. It would not be inaccurate to say that every major institution of our society has fashioned its principles, policies and operating procedures in a manner conducive to promoting the assimilation process. Neither would it be inaccurate to say that this posture toward assimilation has been steadily eroded over the years by the gradual realization that the social and cultural differences of certain groups within society can not be replaced by so-called American mainstream characteristics. Regarding this, William Greenbaum makes the following points in his discussion of the decline of the American ideal and the rise of pluralism:

> Here we come to the first of three main points: the sanctimonious nature of the Protestant leadership and its subsequent decline has left America without an ideal...Calls for American unity were once based on the belief in the special strengths of its institutions; today unity is invoked because of the system's frailty.
>
> The second main point is this: the Anglo-American ideal gave direction and force to the nation's assimilation process, and the decline of the ideal has severely interrupted that fundamental process...The primary function of schooling is socialization... and the primary question underlying the present malaise in education is socialization toward what?
>
> This leads to the third main point: the present period is the first in American history in which the nation's major institutions are reinforcing difference as a way of increasing similarity; it is the first time that the American assimilation process has been forced to strengthen diverse ethnic and cultural identities in an attempt to sustain a unified mainstream.[11]

The discussion above is illustrative of the second assumption that underlies this study. Spurred by our rapid technological growth,

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[11]William Greenbaum, "America in Search of a New Ideal: An Essay on the Rise of Pluralism," Harvard Educational Review, Vol. XLIV, No. 3 (August, 1974), pp. 429-432.

and manifested most dramatically in our complex social changes, the second assumption is that, as the complexity of our society increases, there will be an even greater need for effective decision making processes in public education. These processes must be able to clearly delineate the relationships between specific alternative decisions and their probable consequences or impact on a variety of groups within society.

The remaining assumptions emanate from this concern for adequate citizen participation in educational decision making. One of the first steps to be taken in the promotion of adequate citizen participation is to clarify the functions of lay citizens and professionals. Although this author can not agree entirely with Robert Howsam's statement that "citizens and professionals have tended to share the leadership function in establishing and implementing policies for education,"[12] this author does find Howsam's clarification of the functions in the citizen/professional relationship helpful:

> In general the citizen has been seen as best able to contribute through:
>
> ...sensing needs and setting goals;
> ...deciding on and approving policies;
> ...delegating responsibilities;
> ...evaluating results;
> ...providing support;
> ...serving as a communications bridge between professionals and the community; and
> ...providing feedback from the community environment as a basis for planning.

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[12]Robert B. Howsam, "Problems, Procedures and Priorities," Designing Education for the Future: No. 4 Cooperative Planning for Education in 1980, eds. Edgar L. Morphet and David L. Jesser (New York: Citation Press, 1968), p. 100.

Professionals have served most effectively in:

...providing information, data, and advice; indicating alternatives and their implications, and making recommendations;
...executing public policies through professionally sound procedures; and
...accounting to the public for stewardship.[13]

The citizen functions outlined above may be more pertinent for Boards of Education or Boards of Trustees, than they may be for the average taxpayer, parent, or student. The reality is that this latter group requires greater access to the decision making process than they currently have. To a large extent improving this situation requires a positive attitude toward the value of citizen participation by everyone involved, particularly educational administrators. Thus, our third assumption is that adequate and effective citizen participation can bring valuable information to the educational decision making process. And, our fourth assumption is that the educational administrator is one of the key variables in the achievement of effective citizen participation.

The last assumption which establishes the base upon which this study was undertaken focusses more directly on the relationship between the educational professional and the layperson. Citizen participation which grows out of crisis situations and/or confrontations between the institution and the community most often centers around some past failures or present problems, and less often around some probable future possibilities. Relationships between citizens and educators in an atmosphere of this kind have little chance of being productive in

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[13] Ibid.

the long run. Furthermore, it seems that educational change tends to be more successfully achieved when adequate steps are taken to insure citizen involvement in its development and implementation. Thus, our fifth assumption is that a future-focussed, rather than a present-focussed, dialogue on educational issues is the most effective approach to the implementation of meaningful and productive relationships between professional educators and lay citizens.

Some Definitions

Throughout the discussions in the Introduction and in the first part of this Chapter, we have employed a number of terms and phrases which may well be understood sufficiently by the reader, but ought to be further interpreted here as an added effort toward maximizing clarity. For example, most often used thus far are the terms "citizen participation," or "citizen involvement," and "educational decision making."

Because of the wide range of interpretations and corresponding models that exist in the minds of the experts and those who are directly involved on institutional levels, it would be difficult to come up with a definition of "citizen participation in educational decision making" that fits all its many forms. However, for the purposes of our discussion here, it will be useful to refer to Roger's and Shoemaker's statement that "participation is the degree to which members of the social system are involved in the decision making process."[14] By ex-

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[14]Everett M. Rogers and F. Floyd Shoemaker, Communication of Innovations: A Cross-Cultural Approach (2nd.; New York: The Free Press, 1971), p. 286.

panding upon this statement, we might say that citizen participation in educational decision making is the capacity of individual consumers or indirect beneficiaries of educational services to have access to and be involved in the activity that establishes the nature, arrangements, direction and purpose of those services.

The phrase "public education" appears time and time again throughout this study and, in some cases, refers to that level of education characterised by publically supported elementary and secondary schools. However, it should be pointed out that taxpayer's support of certain higher education institutions is also a kind of "public education". In short, any institution established and supported by the general public for the purpose of providing a common education (even if sometimes specialized) for all or a significant number of citizens should be viewed as a public education institution. The reader should note that this definition of "public education" is consistent with the author's tendency to view citizen participation in both the upper and lower divisions of education as having much more in common than there are differences. Nevertheless, it is recognized that much of the discussion on citizen participation in decision making processes focusses on secondary schools, even though the research data for this study has been gathered from individuals very closely associated with higher education institutions.

It is hoped that the subsequent sections of this study will clarify the fact that our emphasis is not so much on the reasons why citizen participation in educational decision making is so important,

as much as it is on discovering the potential effectiveness of an "iterative assessment of citizen opinion" as a means for facilitating that participation. Specifically, an "iterative assessment" might be viewed as an on-going, repetitive solicitation of citizens' opinions on selected issues and ideas for the purpose of helping educational decision-makers judge more effectively the viability of current and/or proposed programs.

References throughout this study to "educational administrators" are intended to connote a variety of professional personnel who function within the framework of public education institutions, carrying out the policies established by the local School Board or Board of Trustees regarding the content and form of the educational experiences provided for students. For the purposes of theis study "administrators" may include Presidents or Superintendents, Deans or Principals, Department Chairmen or Supervisors, and the like. In short, we are referring to the core decision makers of the institutions.

In general this group tends not to include individual teachers or professors---those who spend the vast majority of their time providing direct services to students. On the contrary, "administrators", as used here, tend to be those whose contacts with students are minimal and who spend much of their time securing and directing available resources toward the successful delivery of services. In this sense, this group may also include such persons as educational planners and evaluators, roles which are more commonly found in the larger institutions or systems.

Finally, we have already mentioned that one of the major concerns of this study is the extent to which the Delphi Technique is an appropiate method for undertaking an on-going assessment of citizen opinion. The Delphi is not so much an investigatory or evaluative instrument, as much as it is a unique process or approach to gathering future-focussed information from a specified population. Because there are several different kinds of Delphis and a variety of ways they can be used, no one description of the Delphi Technique can be considered definitive. Therefore, two interpretations are offered below; the first statement is offered by Alfred Rasp:

> It (Delphi Technique) can be viewed as a series of individual conferences conducted in writing and having three main characteristics: 1) each participant contributes at each step of the questionnaire process before seeing the inputs of other participants for that step; 2) while the individual knows his own responses throughout the process, inputs of others remain anonymous; 3) input gained at one step of the process is shared as part of the next step.[15]

Another definition is offered by Vaughn Huckfeldt:

> The Delphi Method attempts to bring together a group of experts in a "conference call" or "seminar" setting. But, through anonymity of the panel, the Delphi Method prevents the influence of some members of the panel from unduly overriding or swaying the opinions of the other panel members. In some sense, it prevents an important or very articulate expert from controlling the panel's opinion. The Delphi Method summarizes the responses to one round of questions and provides this information to the survey panel with the next successive round of questions. In this way, the experts, while remaining anonymous, still communicate with each other in a limited fashion.[16]

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[15]Alfred Rasp, Jr. "Delphi: A Decision-maker's Dream," Nation's Schools, Vol. 92, No. 1 (July, 1973), pp. 29-30.

[16]Vaughn E. Huckfeldt, "Imaging Future Organization in Higher Education." Imaging Alternative Future School Organizations, Samuel H. Popper, ed. (University of Minnesota, 1972).

The Delimitations of the Study

In a real sense, the discussion in the earlier parts of this Chapter have revealed certain aspects of the boundaries within which this study is being reported. For the purpose of clarity, however the following discussion of the study's delimitations will contain some review of the points made in previous sections.

The "assumptions" and "definitions" sections of this Chapter made specific references to two roles within the education complex; the citizen and the educational administrator. Although there are several other important roles within this complex, this study focuses only on the lay individual who under normal circumstances has no formal or legal access to decision making, and the professional educator whose role and function ties him closely to that process. Furthermore, the study attempts to explore the feasibility of a more productive interdependent relationship between the consumer (citizen) and the provider (administrator) of educational services.

A statement earlier in this Chapter clearly defined what is meant by "public education". None-the-less, it may be helpful here to emphasize that this study will not deal with the various aspects of private education, whether independent secondary schools or private colleges. The only possible exception will be the one or two references to the subpopulation of individuals connected with private institutions, who form part of the total population from whom the data used in this study was collected.

In terms of citizen participation in decision making, public

secondary schools and public universities and colleges have much in common. Both are publically supported, and both have Boards which are supposedly representative of the public. Even more important, both kinds of institutions have long had the problem of establishing programs that are responsive to the diverse needs of the public. Unlike private institutions, the survival of public schools and colleges are, at least in part, dependent on their capacity to meet the demands of a variety of public special interest groups. With this in mind the reader should expect to find throughout the study references to and examples of both the upper and lower divisions of the public education complex.

Perhaps, the most important delimitation of this study has already been alluded to in the discussion of the overall approach to the study. By clarifying the two major questions of the study, and by developing plausible answers based on research evidence, (as well as the author's best judgement,) the reader's attention will be constantly focussed on both the technical aspect of the Delphi Technique in general and on its usefulness to the educational administrator who desires a means for improving his or her relationship with the lay public. The main point here is that the author inteds to maximize the utility of this study as much as possible. Chapter Two, for example, might reveal that very few Delphi studies focus both on the use of the instrument and its design. On one hand, some studies which emphasize the application of the instrument might provide the reader very little insight into the problems of design. On the other hand, other

studies may deal more with the mechanics of building the instrument, than with the use of the instrument in "real life" or even in hypothetical situations. It is hoped that this study will be able to avoid these kinds of problems without minimizing its overall impact.

C H A P T E R I I

REVIEW OF THE LITERATURE

The reader will recall that in the latter part of Chapter I we raised the Preliminary Question regarding the appropriateness of the Delphi Method as a means for undertaking an on-going assessment of citizen opinion. We also offered two brief descriptions of the method itself with the warning that no one description should be considered definitive.[1] Without question one of the merits of the Delphi Technique is its capacity to be applied in a variety of problematic situations. However, it is this fact which makes it virtually impossible to develop a definition or description that would be universally accurate. Thus, the key to understanding the Delphi seems to lie more in how it has been or can be used (and in what contexts) than in overly simplified statements which focus only on the more "classic" aspects of the process.

Throughout its five sections this Chapter will review selected research studies and theoretical articles written on the Delphi Technique during the relatively short period since it has been in general use. The first two sections will be devoted to a survey of Delphi applications in both technological and social science fields. This is followed by a review of some of the design and implementation problems associated with a Delphi probe. Section four focuses more specifically

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[1]Supra, pp. 24.

on the Delphi as a communication tool used in conjunction with current administrative techniques in education. Finally, an attempt will be made to begin answering the Preliminary Question raised in the latter part of Chapter I.

Delphi's Origin and Early Technological Applications

Like most successful innovations the development and use of the Delphi Method did not occur overnight. A rather exhaustive search of the literature gives evidence that the conceptual basis for the Delphi was being formulated as early as 1959 with the writings of Olaf Helmer and Nicholas Rescher. In a report written for the RAND Corporation, "On the Epistemology of the Inexact Sciences", Helmer and Rescher discussed such things as the role of prediction in decision making, and the use of joint experts and consensus. More specifically, they considered their report to be:

> ...a new epistemological approach to the inexact sciences, which include applied physical sciences such as engineering or medicine as well as most of the social sciences. The purpose of all science is to explain past events and predict future ones, and to do so in an objective manner. While explanation and prediction have the same logical structure in the exact sciences, this is not so in the inexact sciences; and this fact opens the door to the development of specifically predictive instrumentalities in these fields, and thus to various methodological innovations. Among these are the systematic employment of expert judgement and the use of psuedo-experimentation, involving simulation processes and, in particular, operational gaming.[2]

Since the late 1950's, many articles and studies have been written and carried out on the Delphi Method. The principle promoters of the

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[2]Olaf Helmer and Nicholas Rescher, On the Epistemology of the Inexact Sciences. P-1513. The RAND Corporation, 1959, p. iii. Also, published in Management Science, Vol. 6, 1959.

method were several people employed by or associated with the RAND Corporation in California and the Institute of the Future (also in California, but formerly located in Connecticut). Much of the initial material written on the Technique grew out of the work of experts and experimenters in these two organizations; individuals like Olaf Helmer, Norman Dulkey, Nicholas Rescher, Selwyn Enzer, and others. Often these individuals would work together on specific studies, or team up with experts in related fields. For example, in 1964 Olaf Helmer at RAND collaborated with Theodore Gordon, who was the Director of Advance Saturn and Large Launch Systems at Douglas Aircraft, in writing a report on a long-range forecasting study.[3]

The Helmer-Gordon report was described as an exercise in predicting trends as far out as fifty years into the future. Through the use of Delphi type questionnaires, the judgements of individual experts were solicited in the areas of scientific breakthroughs, population growth, automation, space progress, probability and prevention of war, and future weapon systems. There was no attempt at that time to ascertain the reliability of the predictions. This was to be left to another time and another study. However, there was the rationale that such an exercise should help in the establishment of a sounder basis for long-range decision making, particularly in the policy areas. Looking at their study retrospectively, Gordon and Helmer summarized their findings in the following manner:

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[3]Theodore Gordon and Olaf Helmer, Report on a Long-Range Forecasting Study, RAND Paper P-2982, RAND Corporation, Santa Monica, Calif., Sept. 1964.

Substantiative Forecasts. For many items whose occurrence is generally expected within the next few decades, the predicted time of this occurrence has been narrowed down somewhat... As for the more remote future, we have observed that some events are definitely expected to happen, some are considered of dubious reliability, and others have been ruled out altogether by our respondents...

Warnings of Potential Dangers. Among the contingency forecasts implicit in the responses were indications of potential danger areas that call for preventive action...

Effect on Participants. ...the questions were thought-provoking to many of our respondents, who may have found some reward for their labor through the mental stimulation to which the experiment exposed them...

Expediency of the Method. ...at least moderate consensus was usually obtained without excessive effort. The dependence of the outcome on certain subjective features...and the possibility of deliberate or subconscious bias in the answers...is equally present in traditional modes of reliance or expert judgement in decision making...

Potential Improvements in Method. A more effective use of experts in Delphi context might be achieved through further methodological research in several areas: improvements in the systematic selection of experts;...methods of improving reliability of forecasts through suitable consensus formulas; ...experimentation with various methods of feeding back information; ...development of techniques for the formulation of sequential questions that would probe more systematically into the underlying reasons for the respondent's opinions.[4]

Another example of a technological application of the Delphi Method is reported by Lawrence D. McGlauchlin who describes in detail how the Honeywell Company answered the question, "How can the corporate research center of a large multiproduct corporation develop and maintain a research program that serves its divisions effectively?".[5]

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[4]Ibid., pp. 94-95.

[5]Lawrence D. McGlauchlin, "Technological Audits: An Aid to Research Planning", A Guide to Practical Technological Forecasting, ed. James R. Bright and Milton E. F. Schoeman (New Jersey: Prentice-Hall Inc., 1973), Part Five, p. 590.

In essence what Honeywell was looking for was an effective method or set of procedures for planning and evaluating its research program. In order to do this the company had to accept the idea that research must have an explicit goal, that the direction and manner of research should be clear to both the developers and the users of that research. Yet, with all this it was imperative that the possible unknowns of the research process should be considered, and that the planning and evaluation procedures should allow for whatever redirection necessary. A key element in the procedures used at Honeywell was the Delphi Technique which was used to gather input from various sources for the purpose of making technological forecasts on the company's research activities.

McGlauchlin's article goes on to describe how, in October of 1967, Honeywell selected a Delphi panel which consisted of scientists, engineers, marketing people, department managers, accountants and planners. Each participant was provided an extensive orientation as to his/her role in the Delphi exercise. The panelists were not asked merely to respond to predictions by outsiders. They were first asked to generate data anonymously, then to exchange arguments about that data.

The collection of this initial data was done during Round A, where the forty panelists generated sixty-four distinctly different ideas. These ideas represented the panelists' attempts to identify three events, occurrences, or developments which would have a substantial effect on Honeywell's business ten years hence. In Round B,

the panelists were asked to rate each prediction according to importance. This was also done in Round C, but with the added feature that each panelist was fedback his responses in Round B along with the consensus response of the entire panel. They were also asked to give arguments if their responses were significantly different from the consensus response. This was followed by Round D, where the panelists were asked to make their final decision on each question, and to offer rebuttals of any arguments unacceptable to them.

A year later, McGlauchlin reports, Honeywell's board chairman initiated a survey of the eighteen corporate divisions. The questionnaire used, which was based on and utilized much of the Delphi generated data developed earlier, solicited the following three types of information from each division of the company:

1. A list of technologies that would have the greatest impact on the division's business during the coming five years.
2. A comment on whether the technology listed would threaten a present part of our business or offer an opportunity for expansion into a new field.
3. An indication of the action to be taken and the magnitude of the business affected (in either case threat or opportunity).[6]

The information resulting from this survey was analyzed by Lawrence McGlauchlin himself. He reported that, generally speaking, the two-year project had a positive effect throughout the company; duplications of effort were eliminated, key components for products were identified, various divisions realized a need to improve their communications, a greater respect for research activities was gener-

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[6]Ibid., p. 599.

ated, high priority was given to important yet underdeveloped technologies, etc. As a result of all this, Honeywell's corporate officers indicated that they wanted part of all research activities to be exploratory, part directed at supporting present products, and part directed toward creating new kinds of business.

Delphi's Social Science Applications

Common to both technological and social science applications of the Delphi Method is the emphasis on the communication process. The Delphi provides an alternative or supplementary approach to interpersonal interaction and tends to structure individual and group queries and responses in a manner that significantly increases the probability that the outcomes of an interaction will be constructive and useful to the participants. Yet, the early technological applications of the method were made not so much for the improvement of communications---which was certainly a necessary component---but, for the specific purpose of developing new knowledge by formalizing and systematizing the process of speculation or prediction in order to make more accurate forecasts about future technological events. An example of how technological needs first served as the catalyst for the development and popularization of the Delphi is seen in the way technologists had become increasingly concerned that attempts to evaluate cost-benefit aspects through mathematical models sometimes eliminated significant technical factors which were crucial to the decision making process.

Furthermore, it is clear from the literature that those social science fields more closely allied to science and technology, like economics, experimented with the Delphi Method somewhat earlier than other fields, like sociology and education. Murray Turoff seems to confirm this in his discussion of some of the previous applications of the Delphi.[7] In his discussion he cites the surprising number of Delphi designers in medical research and health care areas. He reports that a Delphi was designed and executed on "The Role of Mentally Retarded in Society". For those with the mistaken impression that all Delphis focus on the future, Turoff cites a proprietary Delphi that dealt only with historical events affecting the subject of the "Limitation or Elimination of Internal-Combustion Vehicles". In this case, eighty-two technological, economic, social and political events were summarized chronologically, providing management with a condensed but accurate recounting of what had transpired. In examining many Delphi exercises, Murray Turoff discovered a surprising diversity of applications. Some of these applications focused on:

1. Examining the significance of historical events
2. Gathering current and historical data
3. Putting together the structure of a model
4. Delineating the pros and cons associated with potential decision or policy options
5. Developing causal relationships in complex economic or social phenomena
6. Clarifying human interactions through role playing concepts.[8]

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[7]Murray Turoff, "Delphi and Its Potential Impact on Information Systems." A report prepared for the Fall Joint Computer Conference, Office of Emergency Preparedness, Executive Office of the President, Washington, D.C., November 1971.

[8]Ibid., p. 319.

Another social science area where experiments with the Delphi Technique have been attempted is the field of education. It is interesting to note that the major bibliographies on the Delphi fail to identify a fair number of the relatively few studies and articles that have been done in education. One major reason for this probably stems from the fact that most educational applications of the Delphi focus on the communications or consensus aspects of the process, rather than on the validation of the method itself.[9] In other words, educators seem less concerned (at least initially) about the long-term accuracy of the outcomes of a Delphi probe, than they are about establishing some kind of consensus around important topics, like setting institutional goals or establishing the future direction of curriculum. As a result of this tendency among educators using the Delphi, much of their research has been "overlooked" by the more technologically oriented experimenter who seems to have a greater need to establish the accuracy and reliability of the data and of the long-range forecasts resulting from Delphi exercises.

The literature shows that within education Delphi applications have been made more often in higher education than in any other area. There are very few references related to public secondary and elementary school applications, and virtually no references to applications of the Delphi related to community or citizen participation in educational activities. Probably the most complete bibliography on citizen

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[9]The reader is reminded of this author's intention to strike a balance between an emphasis on the educational applications of the Delphi and the detailing of its design problems. See "The Delimitations of the Study" section of Chapter I.

participation in education has been compiled by Don Davies of the Institute for Responsive Education.[10] Among the ten sections of this bibliography, there are four sections which seem particularly conducive to incorporating references on Delphi exercises related to citizen participation in education:

Community Action (Section 2)
School Politics (Section 4)
Community Control and Citizen Advisory Committees (Section 5)
Administration and Accountability (Section 7)

Neither in the above sections, nor anywhere else in the Davies' bibliography is there a reference to a single book, article or study devoted entirely or in part to the use of the Delphi Method. Even the approximately two-hundred dissertations listed failed to reveal any references to the Delphi. On one hand, a point that might be made here is that many educators themselves see no real value in the Delphi Method, beyond that of facilitating the collection of judgements regarding a set of issues. On the other hand, it may be that the time, inclination, resources and expertise required to implement a formal Delphi exercise are not readily available in most educational institutions. (One need only look at the sparse number of planning and evaluation departments within public school systems, and the struggle for survival faced by most research centers in graduate schools of education throughout the country.)

All this is not to say that there are no important reports on educational applications of the Delphi. On the contrary, since about

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[10]Don Davies, Citizen Participation in Education: Annotated Bibliography, Institute of Responsive Education, New Haven, Connecticut, 1974.

1966 there have been at least five major uses of the Delphi method in higher education. Robert C. Judd reports Delphis in "cost effectiveness; cost-benefit analysis; curriculum and campus planning; college, universitywide and statewide educational goals and objectives; consensus on rating scales, values and other evaluation elements, and generalized goals and objectives for the future."[11]

Two of the studies cited by Judd are representative of the kind of Delphi research done in education, and they have particular significance for the work engaged in by this author. The first study was completed in 1971 by Norman Uhl, formerly a research psychologist for the Educational Testing Service (Southeastern office) and now a Professor at North Carolina Central University.[12] Although there were several purposes for the study reported by Uhl, the two main purposes were 1) to evaluate a procedure for obtaining from different on-campus and off-campus groups their perceptions of the present goals of their institutions, as well as what they believed the goals should be, and 2) to evaluate a procedure for obtaining convergence of opinion with regard to the importance of those goals. For the first purpose cited above, an Institutional Goals Inventory for five colleges and universities was developed, with its implementation achieved through the use of the Delphi Technique.

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[11]Robert C. Judd, "Forecasting to Consensus Gathering, Delphi Grows Up to College Needs". College and University Business. July, 1972, p. 35.

[12]Normal P. Uhl, Encouraging Convergence of Opinion, Through the Use of the Delphi Technique, in the Process of Identifying an Institutions Goals. Educational Testing Service, Durham, North Carolina, February 1971.

It is important to note that there were some modifications in the general Delphi procedures used in the Uhl study. For example, instead of generating goal statements from the Delphi participants, the results of a previously completed Institutional Goals Inventory were used as the basis for further investigation. Therefore, the Delphi probe actually began at step two of the normal process, where the participants were asked to check the degree of importance of each goal statement. Normally, the third step of the Delphi procedure requires the participants to respond again to the same items, after having reviewed the group consensus and the individual's response from the previous round. In the Uhl study, the participants were directed not to be concerned with their earlier responses. However, they were allowed to express minority opinions. These minority opinions were fed back to the panel in step four, where the participants were allowed, once again, to revise their opinions.

When the study had been completed, Norman Uhl came to the conclusion that:

> ....The instrumentation (Institutional Goals Inventory) and Technique (Delphi) used in this study to assess the present and preferred goals of five colleges and universities with quite different characteristics were successful. Not only were they assessed, but in most goal areas where there existed some differences in opinion concerning the importance of the goal areas, agreement was achieved ....The degree to which the instrument and technique worked together is well demonstrated by the excellent participation achieved.[13]

Another Delphi study of great significance to the current work of this author is the one completed in 1972 under the auspices of the

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[13] Ibid., pp. 66-67.

National Center for Higher Education Management Systems (NCHEMS). "The Future Planning and Management Systems" conducted by NCHEMS was designed to gain insight into the changes that would be likely to occur in postsecondary education during the next five to fifteen years."[14] Vaughn E. Huckfeldt, a research associate in the NCHEMS Research and Development Unit, reports that the Delphi exercise included 385 participants: federal and state officials; college and university administrators, instructors and students; lay board members and trustees; members of the education press; etc. The NCHEMS Delphi posed six questions over five survey rounds. The following is a summary:[15]

Round I: Asked what are the possible changes that might take place?

Round II: Asked what will be the impact of a change if it occurs, and what is the likelihood of the change occurring?

Round III: Posed these same questions again, this time with feedback of the Round II results.

Round IV: Asked the same questions as in Rounds II and III and posed the additional question: In what time period will the change occur?

Round V: Repeated the question introduced in Round IV with feedback and added two non-Delphi questions: Should this change occur, and who will most affect this change?

Based on the responses of the panel members, the NCHEMS researchers were able to develop a set of forecasts in six specific areas. This author has taken the liberty to compile the salient aspects of these forecasts into a single future scenario on postsecondary education

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[14]Huckfeldt, op. cit., p. 11.

[15]Ibid., p. 13.

as seen by the survey participants.[16]

By the late 1980's, higher education will show significant changes toward greater flexibility and nontraditional approaches to what is learned and how it is learned. This overall change in higher education will be stimulated primarily by the growing importance and influence of postsecondary education on education in general.

Within postsecondary education changes in access and participation will occur earliest and changes in competence and performance occurring last. In terms of impact, changes in planning and management will have the greatest overall impact and changes in educational structure will have the least.

Generally, changes in postsecondary education will have been stimulated by the changing demands of students, the consumers and direct beneficiaries of that education. Efforts to provide for greater accessibility and participation will have resulted from the increasing number of students dropping in and out of the educational process in accordance with their own needs and desires. However, certification of students on the basis of competency will not have experienced any major changes until after the 1980's.

As a result of changes in student demands, a gradual modification of education's structures and components will have taken place. The system itself will have provided for more coordination and sharing of resources. The transferability of credit from one institution to another increases. The content of programs shifts by the 1970's to give an emphasis on social problems and public service. There will have been an increase in collective bargaining between faculty and management. Tenure will still remain and greater emphasis will be placed on teaching even while the "publish or perish" concept remains very much alive. Furthermore, the demand for student housing will have slowed, even though other services like recreation, health and counseling experience a much slower decline. Finally, teaching/learning techniques and processes will still enjoy as much attention in the 1980's, as they had in the 1970's. Increased flexibility and versatility of educational facilities and increased use of TV, computers, etc. will be the rule rather than the exception.

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[16]Note that this scenario is based on Vaughn Huckfeldt's summaries of the six forecast areas, but is in no way intended to represent his or the panel's global view of the future of postsecondary education. Also, a very brief reference to the futures technique of scenario writing can be found in this author's article, "Societal Ignorance, Survival and Freedom", which appeared in MEFORUM, Vol. 1, No. 3, Fall 1974, published by the School of Education, University of Mass.

Student demands and changes in the educational structure will be seen either as having been influenced by or strongly impacting upon changes in the Planning and Management of postsecondary education. These changes will have provided for the use of new techniques with the requirement that all significant research data be collected on the basis of comparability and compatibility. This will prove valuable to funding sources who will be increasing their scrutiny of how available resources are being utilized.

The Delphi Method: Some Problems of the Design and Use

As with any other date-collection procedure, both critics and supporters of the Delphi Method have been quick to identify the advantages and disadvantages that are inherent in the method itself, but sometimes slow to realize the importance of the context in which the method is used. This is just one example of the problems the researcher must face when attempting to design and implement a Delphi probe. The following section in this chapter will focus on several weaknesses of the Delphi, as pointed out by several knowledgeable writers whose involvement with Delphis is well documented. As each area of weakness is identified, an attempt will be made by this author to report how this current study recognizes and deals with the problems cited.

In a paper written for the International Future Research Conference, Selwyn Enzer points out that the Delphi process can be viewed as a series of controlled conferences.[17] On one hand, these conferences (usually conducted in writing) produce concise accounts of the areas of

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[17]Selwyn Enzer, "Delphi and Cross-Impact Techniques: An Effective Combination for Systematic Futures Analysis," (Reprint) Proceedings of the International Future Research Conference (Kyoto, Japan, 1970), pp. 17-37.

consensus and dissensus, the records of which are often valuable long after the conference is completed. On the other hand, according to Enzer, "a Delphi conference often compromises the desirable features of a conventional conference, such as speed, ability to perform a large number of iterations, and intellectual stimulation".[18]

It seems that here Enzer made an enormous assumption regarding the overall productivity and effectiveness of face-to-face conferencing, when compared to the Delphi Conference. He must have assumed that the typical conference group is a well-disciplined combination of individual experts, fully confident of their own expertise to have no need to establish their worth by engaging in the usual interpersonal sparring across the conference table. Also, there is a question as to whether the Delphi conference is any less stimulating intellectually than the conventional conference. Finally, it should be noted that Enzer did acknowledge the advantages of anonymity in the Delphi process, pointing out the improved communications resulting from the removal of psychological barriers, such as the reluctance to openly disagree with one's associates. But on the other hand, he was perceptive enough to note that one disadvantage of anonymity can be the sacrifice of individual recognition as a motive for contributing freely to the inquiry.

This author's response to problems similar to those cited by Selwyn Enzer to select a study area with a certain amount of prior public exposure, and to identify a survey population whose familiarity with the concerns covered by the study was fairly good. For example,

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[18] Ibid.

this current study on citizen participation in educational decision making employs a Delphi probe into the opinions of a sampling of individuals who were responsible, prior to the start of the study, for having identified the issues and developed the recommendations that later served as the content of the Delphi exercise.

Other areas of weakness in the Delphi method have been cited by Norman Dalkey, one of the country's earliest experimenters with the technique. The problem areas identified by Dalkey can be summarized as follows:[19]

1. lack of focus often results from the typical open-ended generation of survey items;
2. lack of relevance can result from absence of assurances that the decision problem which prompted the use of the Delphi are continually addressed throughout the exercise;
3. lack of feed-in mechanism to avoid having to rely entirely on the scope of knowledge of the participant "experts";
4. lack of valid judgement scales, suitable for "qualifying" subjective opinions of individual participants.

Dalkey's concerns in the areas of weakness noted above are confirmed by other authors, as well as by this author's experience in terms of the Delphi application in this study. This writer was able to avoid or minimize only the first two of Dalkey's problem areas summarized above. A proper focus and a degree of relevance for this current study was assured by the fact that the Delphi exercise used here was a follow-up to an on-going, wider decisional study of future

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[19]Norman Dalkey, "Notes on Delphi", paper read before the second General Assembly of the World Future Society, Washington, D.C., June 4, 1975.

higher education needs in Connecticut.

Beyond the weaknesses described above, there are specific technical problems which the Delphi designer must consider each time he or she begins the development of a new exercise. Two such problems are identified by Stuart Sandow in his research report on educational policy formulation.[20] In order to focus the reader's attention on several critical areas among the methods and procedures employed in a Delphi exercise, Sandow outlines seven assumptions needing close examination. One assumption questioned by Sandow is that "expertise" can be identified. He says:

> Expertise is a descriptor attributed to someone, not a quality one can ascribe to himself. A person can claim to be knowledgeable about a field, while others may ascribe the status "expert" to him, based on their perceptions of his knowledge base. The future is a mental construct each individual develops in his own mind.[21]

Sandow is certainly correct to question this assumption. He even states that there is no such thing as individual "expertise" when it comes to making intuitive projections about events that might occur in the future. He acknowledges, however, the validity of group "expertise" in terms of an aggregate response to a Delphi-type question. What Sandow does fail to address himself to is the question of who are the members of the responding population. It seems that the more homogeneous the group in terms of orientation, perspective and experience, the more likely the existence of a prior consensus of opinion regarding

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[20]Stuart A. Sandow, Educational Policy Formulation: Planning with the Focus Delphi and the Cross-Impact Matrix. RR-9 (Syracuse, New York: Educational Policy Research Center, February, 1972) pp. 7-9.

[21]Ibid., pp. 7-8.

the Delphi question to be asked. In short, it is possible that with a less heterogeneous group the numbers of different possible outcomes offered as responses to a Delphi question (like, "What will happen if....?") will be fewer than those of a more heterogeneous group.[22] Thus, it would seem that the accuracy of a collective speculation on the future can be significantly improved by utilizing the judgement of a population of "different", rather than "similar" individuals.

In relationship to the overall theme of the study, "citizen participation in educational decision making", the issue of heterogeneous versus homogeneous survey populations is very important. More attention will be given to the characteristics of the participants in this current study in Chapter Four. However, it might be appropriate to point out here that the degree of heterogeniety within the population used in this study was predetermined to some extent by the fact that the only individuals invited to participate were those who had initially been involved with the development of the Master Plan for Higher Education in Connecticut.

An additional Delphi design problem worthy of mentioning here is

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[22]This statement is based on a theorem of probability found in Edward Minium's Statistical Reasoning in Psychology and Education (New York: John Wiley & Sons, Inc., 1970) p. 214, where he states that "the probability of occurrence of anyone of several events is the sum of the probabilities of occurrence of the individual events, provided the events are mutually exclusive". For example, the probability of drawing an Ace from a deck of 52 cards is related to the number of aces that can be drawn within the total number of opportunities one has to draw, or 4/52. However, the probabilities of drawing the Ace of Hearts or the Ace of Clubs is only 1/52.

described by Salancik, Wenger and Helfer in their study on the construction of Delphi event statements.[23] These event statements in a Delphi exercise represent the content to which various questions regarding their probability of occurrence are addressed. In their study, the three researchers focused on the relationship between 1) consensus of group opinion and the complexity of event statements, and 2) consensus of group opinion and familiarity with the event. The following is a summary of their findings:[24]

Consensus and Complexity

> On the average, when a potential future event is described in 10 words or less the amount of information obtained from the respondents is relatively small. When descriptions reach 20-25 words, a maximum amount of information can be obtained. Beyond 25 words, however, the amount of information obtained declines steadily with increases in the number of words. In short, if an event is described in too few words, there will be little consensus, because of insufficient constraints on its interpretations. Similarly, if an event is described in too many words, there will be little consensus, because there are too many elements to assimilate into a single interpretation.

Consensus and Familiarity

> As more and more words are used to describe events familiar to the respondents, the more likely disagreement will occur. For unfamiliar events, the more words used, the more constrained the interpretation, and the more likely respondents are to agree. In short, if the idea to be expressed is a familiar one, keep it short; adding specifics only adds confusion.

The Salancik, Wenger and Helfer study points out the importance of the role of the Delphi investigator. Without careful thought and good

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[23] J. R. Salancik, William Wenger and Ellen Helfer, "The Construction of Delphi Event Statements", Technological Forecasting and Social Change (New York: American Elsevier Publishing Co., Inc., pp. 66-70.

[24] Ibid.

preparation going into its design, a Delphi exercise can result in a very low yield of meaningful information. Of course, there are other factors which can influence the amount of useful information obtained from a Delphi. However, it should be pointed out that much of the determination of what and when Delphi results are useful or meaningful rests with the perceptiveness and experience of the investigator. For example, although achieving agreement is a traditional by-product or major purpose of a Delphi exercise, the experienced investigator can make equally important "discoveries" from data which indicates dissensus, as he can from data indicating consensus.

Educational Planning and Decision Making

As stated at the beginning of this chapter, this fourth section will focus on the Delphi Technique as a communication tool used in conjunction with current administrative techniques in education. More specifically, we shall emphasize those approaches used by many educators to generally manage educational institutions over both short and long-term time spans. This brief investigation will enable us, then, to speculate on the ways Delphi concepts and procedures might be used in today's administrative and management activities. The reader, however, should be aware that throughout this section two major assumptions will tend to govern the direction and nature of most of the discussion.

The first assumption is that the most enlightened and effective educational leadership style is one characterised by proactive, rather than reactive behavior. A proactive leader is one who can effectively minimize his or her own tendency to always exhibit defensive behavior

in the face of daily environmental stress. A proactive leader is one who habitually makes decisions with a conscious effort to foresee the consequences of a potential act in terms of the goals of the institution he or she is managing. For example, if we were to consider the demands on the urban school principal (or, suburban principal, for that matter) by citizens seeking more involvement in educational decision making, we might be able to see the proactive principal's response as:

> ...exploring techniques and processes which capitalize on the unique but equally valid competencies of both the principal and the parent or community group. In short, a proactive...principal... 1) seeks long-term solutions to current problems, 2) anticipates future problems by considering the consequences of present goals and actions, and 3) collaborates with parents in carrying out the first two activities.[25]

In a real sense, a proactive leadership and administrative style is as much a mental attitude as it is a set of specific techniques or practices. Those principals and other administrators who earnestly attempt a proactive posture very often find that the advantages of this approach outweigh the possible disadvantages. For example, principal Arnold Birmingham developed the following multiple vehicles for citizen input: Community Council, Grass Root Task Forces, Agency Task Forces, and a Parent Core Group. In regard to this overall program, Birmingham writes that he "...suffered no loss of administrative authority in making the school a community education center and involving large numbers of citizens."[26]

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[25]Ken Washington and Ben Dixon, "Community Involvement and the Urban Principal", Consortium Currents, Vol. I, No. 2 (Spring, 1974), p.3.

[26]Arnold Birmingham, "School Principal Encourages Involvement", Citizen Action in Education, Vol. 3, No. 2 (December, 1975) p. 3.

The second assumption underlying the discussion in this section is that the most important kind of planning is that which precedes decision making, rather than planning which comes afterwards. Too often, for too many people, the term "planning" connotes those thought processes and/or activities undertaken to prepare for the implementation of a task which has already been identified and decided on. Less often, unfortunately, it means preparing for the decision making first by determining the need, the nature of the task, and why it should not be undertaken. When viewed in this latter fashion, planning no longer remains a luxury activity, but becomes a necessity for effective decision making. As a matter of fact, this type of planning is often a trademark of the proactive leader, who might well be described as one who tends to avoid the dangers of reactive planning. Thomas Sergiovanni and Fred Carver cite some of the dangers resulting from reactive planning.[27]

1. Stability is prized...Periods of inaction are welcome, for they resemble equilibrium and satisfy the need to eliminate uncertainty.

2. Defensive Management is encouraged. Reactive strategies often result in school executives evaluating decision alternatives in terms of their own safety, security, and status.

3. Paternalism is encouraged...Decisions are often made on the basis of favoritism and protective trade-offs. Kingdoms are encouraged and special interest groups emerge as protective lobbies.

4. Long-range planning is forfeited. Reactive strategies are short-term survival--and maintenance--oriented...tomorrow's problems are guaranteed because no deliberate attention is given to the future.

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[27]Thomas Sergiovanni and Fred Carver, The New School Executive: A Theory of Administration, (New York: Dodd, Mead & Co., 1973), pp. 214-215.

5. Educational goals assume the lowest status...educational goals and the welfare of students are displaced by organizational and administrative needs, goals, and demands.

Avoiding the dangers of reactive planning is, perhaps, the single most important reason for the recent development of various systems concepts in educational planning. Although concepts appear in a variety of guises, they can be described generally under three headings: Management Systems Approach (MSA), Cooperative Systems Approach (CSA), and Technical Systems Approach (TSA). According to Sergiovanni and Carver,[28] MSA would be used more for administrative, than instructional problems on a long range basis, where school executives are the major actors, and when decision making is more often centralized. CSA, more appropriate for instructional problems, also would be used with long range goals, but with teachers in major roles in situations of decentralized decision making. TSA would be used for short term problems under both MSA and CSA conditions, such as planning summer workshops, etc.

It is important to note that the system concepts described above are often promoted as a means for clarifying authority, determining responsibility, and facilitating accountability. However, many of the advantages of these approaches can be lost, if they are not flexible enough to allow the necessary input for modifying existing operations or reordering current goals. Further, such input or feedback should be generated from all those having some association with the issue in question, including students, teachers, school executives and citizens in general. Involving these various constituent groups in decision

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[28] Ibid., p. 213

making can become tremendously advantageous for the educational administrator or planner who, in the absence of significant amounts of "hard data", must rely almost entirely on judgements made on the basis of observations and intuition. Utilizing these sources of information can greatly increase the probability that rational decision making will characterize the activities of the educators attempting to use the systems approach. Further, it is possible for the administrator to monitor the effectiveness of his use of the "rational systems approach" by simply determining to what extent the following objectives can be met:[29]

1. problems can be clearly defined and delineated;
2. complete sets of alternatives can be discovered and described;
3. a set of consequences can be attached to each alternative;
4. consequences can be weighted according to some objective formula in terms of probabilities of success in solving the problem;
5. this weighting procedure permits cardinal ordering of alternatives.

The Delphi Technique is particularly suited to facilitating the achievement of the objectives described above. This technique or procedure permits the widening of the organization's abilities to seek and gather informed opinions from a number of populations, without having to rely solely on face-to-face interaction. However, it should be noted that the Delphi Technique is probably least effective when used as a total substitute for traditional conferencing procedures. Used as a supplementary, flexible tool for sampling ideas and opinions from many diverse sources, the technique can do much to enhance the credibility and overall effectiveness of any one of the systems approaches

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[29] Ibid., p. 231.

(Management, Cooperative, or Technical) described earlier.

Conclusion

The reader will recall that the overall purpose of this Chapter was to begin answering the Preliminary Question of this study: "To what extent is the Delphi Technique an appropriate method for undertaking an on-going assessment of citizen opinion?" Given the evidence derived from the literature (as described in this chapter) the reader no doubt has already begun to formulate an answer to this question. Of course, no final answer can be given until all of the data and information related to this study has been reviewed. At that time, this writer feels confident that the study will show the Delphi Technique to be one of the more, if not the most, appropriate information gathering devices for systematically polling the opinions of citizens regarding educational issues which are so often ladened with political and emotional factors, as to make it almost impossible for the administrator to engage in rational decision making.

As a way of further convincing the doubting reader, this writer should point out the fact that the two assumptions discussed earlier in the previous section should not be viewed as necessary "conditions" under which the Delphi Technique can be used. That is, although proactive leadership and pre-decision planning within a relatively flexible and participatory educational organization will tend to maximize its effectiveness, the Delphi Technique can still be used in less "open" situations. For example, a strictly authoritarian leader may find it helpful to check his perceptions of a given situation against

those of a selected group of staff members. Similarly, the development of planning activities after major decisions have been made may be greatly facilitated by involving those who will be directly responsible for any future implementation of those plans. All this can be done through the application of the Delphi procedures.

Finally, the unique aspect of the Delphi Technique which sets it apart from ordinary survey or polling devices is its future orientation. The typical Delphi question solicits responses from participants that focus on some future, rather than a present condition or state of affairs. This tends to avoid debates regarding the appropriateness of the data used, or the validity of a particular interpretation of the data. In short, any participant's opinion, no matter how it was formed, may well turn out to be the alternative around which other participants might be able to form a consensus, after a round or two of gathering input and feedback from the entire group.

CHAPTER III

THE STUDY

The discussions set forth in Chapters I and II make it fairly clear that indeed, citizen participation in educational decision making can be facilitated by an on-going assessment of citizen opinion. Also, it is clear from the literature that this assessment can probably be carried out effectively through the use of the Delphi Technique. Thus, it might be said that both the Preliminary and Central Questions of this study have been answered---at least, tentatively.

Assuming the accuracy and validity of the information already provided to deal with these questions, it may be productive to examine a specific application of the Delphi in the context of a decision making process related to the operation of an educational enterprise. This is the purpose of Chapters III and IV. The aim of this current chapter is to describe the background and development of the Connecticut Master Plan for Higher Education, the state-wide project which served as the context in which this writer designed this research study on the Delphi Technique. The outcomes of this study will be discussed in Chapter IV.

Origin of the Master Plan

In 1701 the Connecticut General Assembly chartered the Collegiate

School which was located in Saybrook. After several moves the school was finally located in New Haven in 1717 and, after a year, took the name Yale College. A second Connecticut collegiate institution, Washington College, was chartered in 1823 (now known as Trinity College). These two institutions marked the beginning of the state's tradition of "private" colleges and universities, which now number a total of 25.

The period between 1850 and 1903 marked the establishment and growth of Connecticut's public higher education system. The first institution to be started was a normal school located in New Britain. By the end of this period three other normal schools were established in various parts of the state. Later, in 1881, steps were taken to set up the state university:

> ...two brothers from Mansfield, August and Charles Storrs, contributed 170 acres of land and $65,000 to establish the Storrs Agricultural School. From the original two-year course in agriculture, the school has grown to the present University of Connecticut with its 17 schools and colleges including, most recently, the medical and dental schools. The University also operates five two-year branches at Groton, Hartford, Stamford, Torrington, and Waterbury.[1]

There are currently four state technical colleges in existence, the first having begun in 1946 as the Connecticut Engineering Institute of Hartford. Between 1961 and 1972 a total of 12 two-year community colleges were established throughout the state, thus completing the instructional and training units of the emerging state-

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[1] Master Plan for Higher Education in Connecticut 1974-1979, (State of Connecticut Commission for Higher Education, January 1974), p. viii.

wide public system of higher education. The final step in development of Connecticut's public system was 1965:

> Public Act 330 which defined the system, after a study by the United States Office of Education had recommended the consolidation of all public higher education under a single board of regents, was a compromise measure. The compromise--a coordinating agency and three governing boards for the University of Connecticut, the state colleges and the regional community colleges--was patterned on successful models existing around the country. In 1967 the board of trustees for technical colleges petitioned to be added to the system, and this was approved by the General Assembly. In 1973 the General Assembly authorized establishment of a fifth operating unit, the Board for State Academic Awards.[2]

Self-study and planning were not unusual activities for the various independent and public colleges and universities prior to the establishment of the Commission for Higher Education (CHE). Prior to 1965 such studies and plans were carried out independently by each institution in almost total isolation from each other, despite the loosely organized network that existed during this period. With the advent of the CHE these evaluative activities became more intense and coordinated. For example, around 1972, the University of Connecticut completed studies concerning a general planning outline and a second financial assessment, while the State Colleges described their objectives in a document entitled, "Academic Development of the Connecticut State College System."[3]

The Commission for Higher Education's most comprehensive planning effort prior to 1974 was its establishment in 1970 of four citizen Task Forces to study and make recommendations in the following four

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[2] Ibid, pp. viii - ix.

[3] Ibid, (Preliminary Draft), p. vi

major areas:

1) Needs: Socio/Economic, Manpower, Regional;

2) Function, Scope and Structure of Higher Education;

3) Financing Higher Education; and,

4) Qualitative and Quantitative Performance and Achievement in Higher Education.

The original "coordination of planning" responsibility of the CHE was later expanded to "planning and coordination", a concept which was given real meaning by a legislative act in 1972 (Public Act No.194) calling for the Commission to prepare a five-year Master Plan for higher education in the state. The CHE was charged to prepare, in cooperation with the other constituent units, and present the first Master Plan not later than January 1, 1974. It was also decided that this five-year plan was to be updated and revised every two years. The broad objectives of the Master Plan, as set forth in the legislation, were:

1) to establish goals for the higher education system and to propose means to achieve the goals;

2) to establish bases for better understanding of the state system of higher education on the part of the public and of the executive and legislative branches of government, and

3) to establish bases for state commitments to specific long-range policies and directions for higher education in the state.[4]

Structure of the Master Plan

The Master Plan activities were carried out by more than 300

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[4]"The Master Plan Project", Newsletter: Higher Education in Connecticut, Vol. IV, No. 1 (October 1972), p.1.

persons, organized in three types of committees; the Management/Policy Group, the eight Resource Groups, and the Review and Evaluation Group. Also involved were the various constituent units, the Commission for Higher Education and the executive and legislative branches of state government. (See Figure 1). The following are brief descriptions of the three committee types:[5]

1. Management/Policy Group: A steering committee for the Master Plan process; membership consisted of the chairmen of the Boards of trustees for the constituent units, and the president of the Connecticut Conference of Independent Colleges. Liaison representation from the Governor's Office and from the General Assembly were also represented.

2. Resource Groups: These groups were charged with developing position papers on specific topics for utilization in the development of a Master Plan. Membership was proportionately balanced between the higher education community and non-academic to insure that a broad spectrum of viewpoints were represented in group deliverations.

3. Review and Evaluation Group: A group invited to review, evaluate, and make comments on the Resource Group reports and successive drafts of the Master Plan. Ten members represented a wide spectrum of the state's business and public interest activity and three ex officio members were from state government.

The Committee providing the widest participation of individuals from various backgrounds and orientations were the eight Resource Groups. Each Resource Group had a chairman, a staff associate, and a minimum of six persons from higher education, two persons representing faculty, two students and two administrators, and six persons not involved in the higher education community. The membership of these

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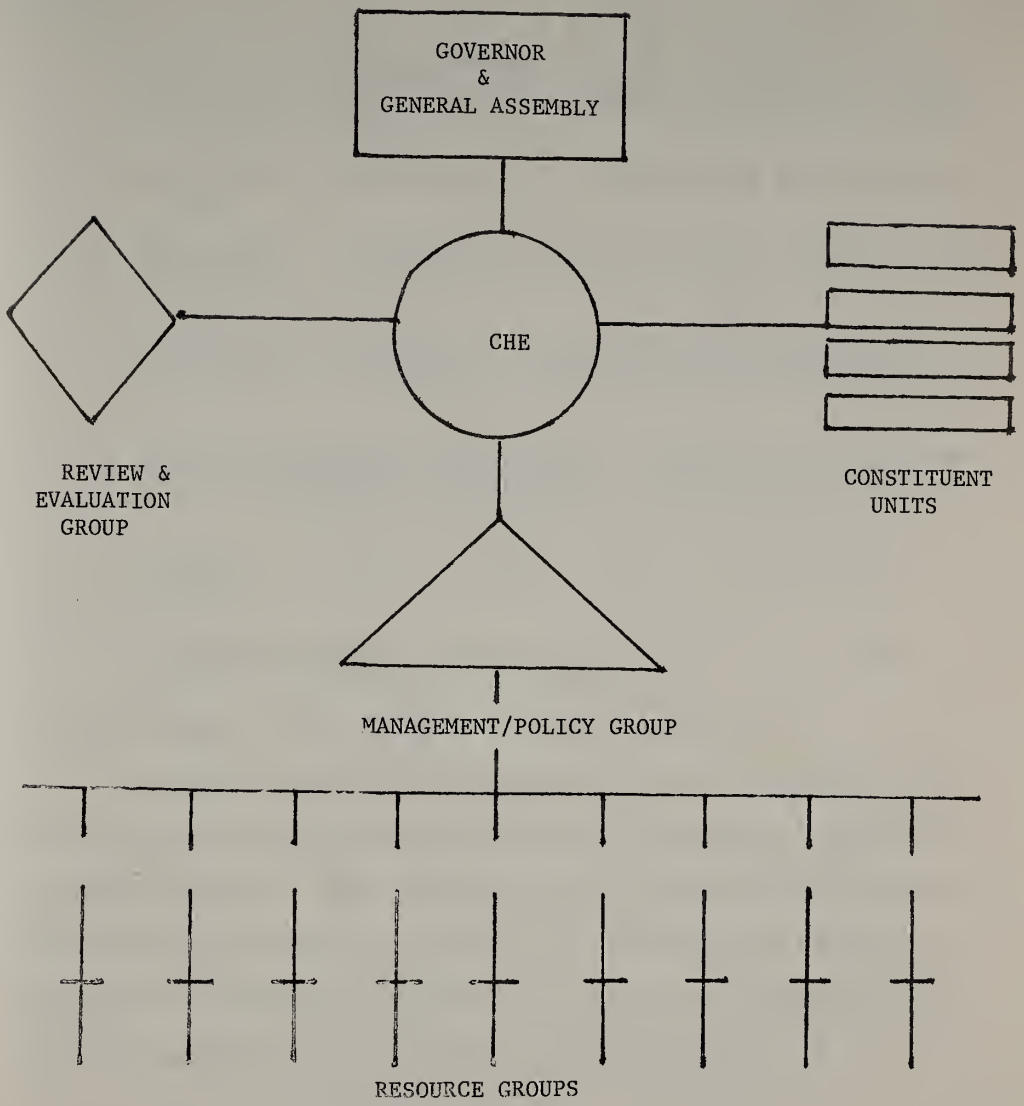
[5]Master Plan Staff Associates, A Report to the Management/Policy Group; Document #8 (Connecticut Commission for Higher Education, February 1973), p. 3.

Fig. 1

CHE MASTER PLAN: STRUCTURE



Source: Connecticut Commission on Higher Education

Resource Groups ranged between 20 and 50 individuals. These groups were charged with studying their individual areas of assigned responsibility and preparing a report which would recommend developments to be achieved over the next five years. These responsibility assignments were:[6]

I. Goals: Goals for the Systems of Higher Education; Role and Scope of the Constituent Units, Number and Location of Institutional Units.

II. Enrollment: Distribution of Enrollment Among the Constituent Units.

III. Facilities: Utilization of Existing Facilities; Needs for New Facilities.

IV. Programs: Distribution of Programs Among the Constituent Units; Need for Revision of Programs; Need for Termination of Programs.

V. Alternate Approaches: New Methods of Delivery of Higher Education; Improvement of Opportunity in Higher Education; Institutional Productivity; Use of New Media and Technologies.

VI. Transfer: Transfer of Students Between Institutions and Programs.

VII. Equal Opportunity: Special Needs of Minorities in Higher Education and Methods of Meeting Needs.

VIII. Finance: Fiscal Support and Resource Allocation.

It should be noted that a ninth committee, not strictly a Resource Group, was formed for the purpose of developing a state-wide information system. This committee worked closely with each of the Resource Groups in terms of data input. In addition this committee was charged with studying the long term development of a defined network, and the organizational structures to manage and control the operation

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[6]"The Master Plan Project", op. cit., pp. 3-4.

of that network.

Rationale for the Study

The first sections of this chapter have discussed the background and development of Connecticut's Master Plan for Higher Education. This background, plus the first hand experience of this writer as a participant in many of the master planning activities, provide the basis upon which the conceptual design of this study was formulated. When the Master Plan was completed in early 1974, one of the recommendations (No. 66) called for the establishment of a long-range planning commission to plan for education in the year 2000. The rationale underlying this recommendation suggested that long-range planning must occur simultaneously with institutional efforts to cope with short-term changes. That is, in addition to being concerned about the kind of education offered today, planners and administrators should be aware of the future educational needs of the people and institutions within the state.

The implications of this suggestion, to plan for education in the year 2000, become clear when one stops to think of the many possible ways in which the future of higher education in Connecticut could be jeopardized. It would seem that the future survival of this educational enterprise, just as with any system, will be largely dependent on the relationship between its long and short-term goals and strategies. The following excerpts and illustration from an earlier article by this writer will further clarify this perspective on planning:

> If by "survival" we mean the existence of humankind in some alternative future, then the strategies we implement now to deal with

our social, economic, and environmental problems must remain effective long enough to provide us ample "lead-time" to decide on and plan for the most desirable of the available alternative futures...(See Figure2)

...moving outside "present perceptions of reality" is a good way to describe the creativity and farsightedness needed to effectively use our survival "lead-time"...If people can develop enough foresight about future events, it is less likely that they will be totally surprised by and unable to cope with these events, if and when they do occur. Also, at the time when future events do become reality, the individuals who previously made an effort to foresee those events will have a better insight or perception of what is actually happening. In short, speculating on the future may be a good way to clarify the present.[7]

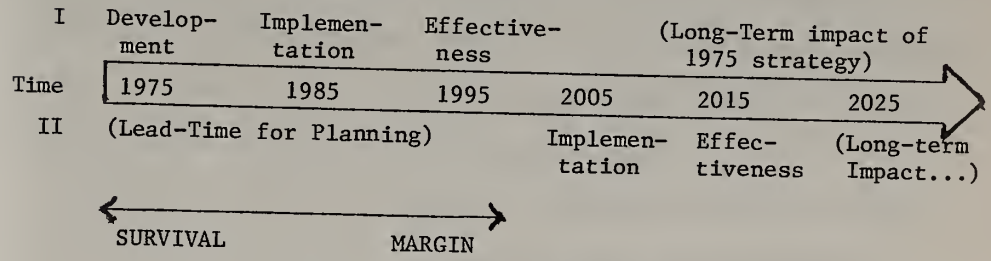

Fig. 2 - Survival Time-Frames

The kind of future-oriented research and planning implied in Time Frame II Above calls for the following kinds of activities, as it relates to higher education in Connecticut:

1. Questioning the Future - - What might...what can...and what should happen in higher education in the future?

2. Specifying Goals - - What are the major possible goals for higher education in Connecticut's future? What are the possible trade-offs, priorities, and consequences of these goals?

3. Adopting Planning Stance - - How can we intervene in the present to prevent the future occurrence of an undesirable state of affairs in higher education? In what ways can we change our present behavior in order to adapt to the inevitability of

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[7] Dixon, loc. cit., pp. 82-83

> some future state of affairs in higher education? What intentional acts can we undertake now in order to bring about a new state of affairs in the future that differs in some respects from past experience?

Authentic answers to these and other questions of similar importance cannot come from a closed planning and decision making process, particularly one which significantly excludes participation by those who will be affected by such plans and decisions. Fortunately, the Connecticut Commission for Higher Education was able to involve approximately 300 individuals from a variety of backgrounds and occupations in the master planning process. The input from these persons was both valuable and timely, and it represented a strong beginning of greater participation by citizens in the planning process.

While participation of this kind stimulates greater accountability to the public on the part of the "providers" of postsecondary education, it also creates additional opportunities for the "providers" to hold citizens responsible for on-going support of recommended changes in higher education practices in the state. Much of this "two-way accountability" can be facilitated by on-going systematic documentation, review, and evaluation of citizen involvement in the areas of planning and decision making. It is important that such systematic studies do more than just analyze the participation process. Much significant information can be obtained by evaluating also the product of that participation. It may well be more important for higher education administrators to know exactly what changes citizens desire or expect to occur in the future, than to discover, after-the-fact, the inadequacies in existing programs and delivery systems.

One of the most perplexing problems for administrators and other institutional decision makers is how to "weigh" the input from groups and individuals with differing motivations, needs and expectations. Maximizing the long-term benefits of higher education in the state cannot be accomplished solely by following the maxim, "the squeakiest wheel gets the most oil". Public meetings, task force groups, and committees of all kinds are susceptible to domination by individuals with the most cogent arguments, or persons perceived by others in the group to be "experts" or "more experienced" in the areas under discussion. In addition to this major weakness of these input methods, there remain the problems of sustaining participation beyond a series of meetings, and collecting and analyzing the individual and collective opinions and ideas of the participants.

The study described below sought to explore an alternative (or supplementary) method for soliciting opinions regarding the future of higher education in Connecticut. It spoke to the need for on-going or follow-up participation mechanisms which would not rely on the interpersonal communications that characteristically takes place around the conference table.[8]

More specifically, the study sought to discover what new and important information might result from a procedure which systematically solicited the anonymous opinions of a diverse group of people through-

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[8]This is not to suggest that public meetings, committees and task forces are inappropriate participation methods. It is simply to say that the more ways a planner or administrator has to view public opinion, the more likely he will come to understand the public's real needs.

out the state regarding the major recommendations of the Master Plan for Higher Education. Finally, the research approach used in the study was future-oriented in that it raised the questions of timing and potential impact of the implementation of the more than 100 recommendations made by the Commission for Higher Education.

Design of the Study

Objectives: The preceding section outlined the underlying rationale for the study and some of the problem areas with which it was concerned. A further clarification of the purpose of the study can be seen in the following list of major objectives. These objectives fall into either one of two basic categories; one which relates directly to the Master Plan recommendations (Objectives 1, 2, and 4), and the other which is concerned with the appropriateness of the instrument used in this study as a survey device for planners and administrators in higher education in Connecticut (Objectives 3 and 5):

STUDY OBJECTIVES

1. To determine the extent to which various groups associated with the development of the Master Plan differ in their estimations of the dates of implementation or occurrence of specific changes in higher education.

2. To determine the extent to which various groups associated with the development of the Master Plan differ in their estimations of the potential impact of specific changes in higher education.

3. To determine the value of a modified Delphi survey as a supplementary communication/input technique for citizen participation in the development of higher education in the state.

4. To identify from among a selected list of institutions and major constituent groups those which well be most helpful and those which will be most hindering to the implementation of

specific changes in higher education.

5. To obtain specific and general feedback regarding the perspectives of selected populations on the Master Plan to date.

Method: The basic method for gathering data in this study was the Delphi Survey.[9] This technique was developed at the RAND Corporation as a means for soliciting and combining the opinions of selected individuals on a given subject. The main features of this method are: 1) the anonymity of the respondents, 2) the statistical analysis of the population's responses, and 3) the use of controlled feedback to the respondents in a series of successive rounds. A typical Delphi round may contain one or more questions regarding some future change or event. For example, regarding the projected demise of the public school as an institution of society, a Delphi Survey might ask: "When will this event occur?", or "What will be the impact of this change?". Analyzing the responses to these questions can be made easier by requiring all answers to be presented in a uniform manner.

The overall research plan of this study tended more toward the descriptive than the experimental, inasmuch as the researcher did not attempt to grossly manipulate the variables involved. However, there are certain features of the instrument used in this study which are more characteristic of the experimental method for gathering data.

First, the study's statements of educational change, about which a series of questions was raised, were not in every case exact dupli-

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[9]The reader is reminded of the definitions of the Delphi Technique found in Chapter I, as well as the references to the research done on this method which are described in Chapter II.

cations of the Master Plan recommendations. In fact, the 117 recommendations were reduced to 15 by combining major ideas, and by selecting those educational changes deemed most significant in the mind of the researcher. Even though somewhat constrained by the number of recommendations used, an effort was made to create a list of change statements which related in some way to each of the areas of emphasis in the Master Plan (e.g., organization and structure, facilities, non-traditional approaches, equal opportunity, etc.). (See Appendix A)

Following is an example of how the 117 Master Plan recommendations were reduced to 15 for the purposes of this study. Under each set of Master Plan recommendations is the related Delphi Change Statement which represents a kind of synthesis of those recommendations:

Set No. 1 MASTER PLAN RECOMMENDATIONS

(14) that the statewide Information System (I/S)...be used to generate data...which can be used by evaluators...

(48) that for input to the Information System (I/S) each of the constituent units submit...an inventory of programs currently being offered and that the independent institutions be requested to submit a similar inventory.

(94) that the I/S system compile data by sex to facilitate monitoring of affirmative action plans.

(99) that...resources necessary to...development of management information system (I/S) be made available and that...finance be given top priority.

RELATED DELPHI CHANGE STATEMENT

(2) Five related data bases focusing on students, staff, facilities, and finance will be interlinked and operative as a statewide management/communications Information System.

Set No. 2 MASTER PLAN RECOMMENDATIONS

(16) that regional planning become a major component of the overall planning and coordination of higher education in Conn.

(20) that the...institutions offering a two-year component consider how they can expand services to a region through combining efforts and resources.

(32) that...the alternatives of renovating, leasing or regional sharing be...reported along with capital requests.

(45) that the subcommittee on Coordination of Planning review...new programs for purposes of regional and statewide coordination and to verify that programs comply with mission.

RELATED DELPHI CHANGE STATEMENT

(6) Planning and Coordination of the functions and missions of higher education institutions will be carried out with a major emphasis on regional cooperation.

The second experimental-like feature of the study involves the periodic feedback to the respondents of the collective opinions expressed during an earlier phase or round of the survey. Using the Delphi instrument, along with proper analysis, it is possible to expose a single subunit (X) of the survey population to the summary responses of some other subunit (Y). However, because this study sought to develop empirical knowledge via a survey of opinions within the framework of controlled communications, the researcher chose to expose all subunits to the same summary of responses from the entire population.

Participants: The subjects forming the survey population were solicited from the major groups associated with the development of the Master Plan for Higher Education in Connecticut. Of the three groups involved in the survey only the Constituent Boards of Trustees of the

various universities and colleges had already been functioning as units prior to the beginning of the master planning activities. The other two units, the Resource Groups and the Review and Evaluation Group, were especially created for this project. Individual appointments to these two units were made by a Management/Policy Group consisting of the chairman of the boards of trustees of each constituent unit, the president of the Connecticut Conference of Independent Colleges, a representative of the Governor's office, and two members of the General Assembly.

The members of the Constituent Boards of Trustees, in addition to their regular duties as policy makers for the various educational institutions and services, were very often members of specific Resource Groups working on the Master Plan. However, they were not asked to work on the project as a single collective unit, as were the members of the Resource Groups and the Review and Evaluation Group. These latter two units were given the following charges:[10]

Resource Groups

1. To examine in detail elements of the Master Plan as assigned by the Management/Policy Group;

2. To prepare a written report, including recommendations, in response to but not limited to, specific questions from the Management/Policy Group;

3. To respond to requests, subsequent to submission of their reports, for consideration of additional recommendations.

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[10]Handbook: Higher Education in Connecticut (Implementation of P.A. 194 - Master Plan) (Connecticut Commission for Higher Education, November, 1972), Document No. 4, pp. 14-16.

Review and Evaluation Group

1. To review reports from the Resource Groups;
2. To submit to the Commission comments and recommendations on the Resource Group reports;
3. To respond to requests for recommendations throughout the development of the Master Plan.

The participants described above formed the three subpopulations involved in this study. These persons came with backgrounds in education, business, industry, government, and community organizations. Although a total of approximately 291 of these individuals were invited to participate in the Delphi exercise, it was expected that no more than 50% or 143 would actually participate. Of those that did participate, the expectation was for an 80% overall cumulative response by the end of the survey. That is, it was hoped that 80% of those indicating a desire to participate would complete at least one or more rounds of the survey. Table 1 below shows a breakdown of the population totals and the expected number of participants in each category:

Table 1

DELPHI SURVEY POPULATION

Population Category	No. Possible Participants	No. Expected Participants
Review and Evaluation Group	12	6
Members of Constituent Boards	63	31
Resource Groups	211	105
Miscellaneous	5	1
TOTALS	291	143

Materials and Procedures: The data gathered in this study can be classified in two ways: one, that data which describes the characteristics and differences among the three major survey subpopulations; and two, that data representing the panel's opinions and judgements regarding the future occurrence and probable impact of fifteen changes in higher education in Connecticut.

The demographic (first category) data was collected by way of a normal information questionnaire which was designed to maximize the amount of pertinent information obtained on each participant without discouraging an individual from further involvement in the study. The second category of data consists of the results of the Delphi probe itself. The materials used here included the fifteen Delphi Change Statements which served as the context in which the panel (survey population) was asked to answer in successive rounds several questions regarding those changes. Basically, these questions related to the probable timing and impact of the changes, as well as the identification of those institutions or groups that would tend to promote or hinder the occurrence of these changes in higher educations in the state.

As a result of the study's process, additional information for the panelists was provided. For example, the results from the first round of questions were fed back to the participants during the second round. Exposed to this "new knowledge", the panelists were asked to respond in the second round to the same set of questions and statements used in the first round.

The conclusions and findings of this study are based on both a general and statistical analysis of the data collected. The general analysis deals with questions relating to such things as the usefulness of the information gathered in this survey to educational institutions and groups. Also, the various comments and minority opinions expressed are reviewed and reported. The statistical analysis deals primarily with the population characteristics, as well as a variety of questions regarding the responses to the Delphi queries. In some cases this analysis deals with specific hypotheses, such as the following:

1. In terms of the fifteen Delphi Changes, the mean implementation dates of the subpopulation with relatively more authority in higher education equal the mean implementation dates of the subpopulation with less authority.

2. In terms of the fifteen Delphi Changes, the mean impact estimates of the subpopulation with relatively more authority in higher education equal the mean impact estimates of the subpopulation with less authority.

3. In terms of the fifteen Delphi Changes, the mean responses of the panel to Round I questions equal the mean responses to the same questions in Round II.

The following five steps outline the major phases of the study in which all pertinent data was collected. (A more detailed sequence of events related to the study can be found in Appendix B. Also, it should be noted that prior to Phase I below, this writer had to make arrangements with the administrative leadership of the Commission for Higher Education in order to have access to certain information and resources of the Commission. Communications to this effect, including this researcher's letter to the survey population inviting them to participate, can be found in Appendix C.)

Phase I

Population identification and collection of personal data on those members of the survey population who were willing to participate in the study as respondents.

Phase II

Initiation of Round I by soliciting responses to the following questions about the fifteen Delphi Change Statements:

1. "Assuming this change will occur, what will be its impact?" (on the people in the State of Connecticut) (None - Very Great)

2. "When will this change occur? By 19___?" (1975 1980 1985 1990 1995+ Never)

Phase III

A. Initiation of Round II by returning Round I questionnaire to the panelists and indicating the following information for each Delphi Change Statement:

   1. Median response of the panel for each change statement;

   2. Interquartile (inner 50%) of panel responses for each statement;

   3. Range of responses for each change statement; and,

   4. Individual panel member's response for each change statement.

B. All panelists were asked to respond again to the same questions as in Round I. For those panelists who, in this Round, responded outside the interquartile range of responses in the first Round, a request was made to explain the reasons for their "minority" opinions.

Phase IV

A. A summary of Round II responses was issued.

B. Initiation of Round III by soliciting responses to the question:

   "Which one of the following will most promote and which one will most hinder this change?"
   (institutions/groups involved in higher education)

(Federal and State Government, Industry, Students and Faculty, Public and Private Education)

Phase V

A. A summary of Round III responses returned to the panel.

B. Data from all three Rounds were analyzed and preliminary findings and conclusions summarized.

CHAPTER IV

OUTCOMES OF THE STUDY

In the previous chapter, the Delphi survey population was described in terms of the total number invited to participate, the expected number of participants, and the categories in which these participants fell. The purpose of the first section of this chapter is to review this data in greater detail. The second and third major sections of this chapter will be devoted to a description of the analysis of the participants' responses to the various questions raised in each of the three survey rounds. The final section will review the findings of the study itself. The reader is reminded that, although the study was focussed on higher education, the techniques employed can be applied in a similar manner to research efforts relating to citizen participation in public elementary and secondary education as well.

Profile of Delphi Panelists

As established earlier, the categories in which the participants were classified are based on the organization of the groups involved in the implementation of the Connecticut Master Plan for Higher Education. Therefore, for the purposes of this study, the participants are identified as belonging to either one of the Constituent Boards of Higher Education in the state, the Master Plan Review and Evaluation Group, or the Resource Groups involved in the development of the Master Plan

recommendations. Individual participants who could not be easily classified in one of these three groups were placed in a miscellaneous category.

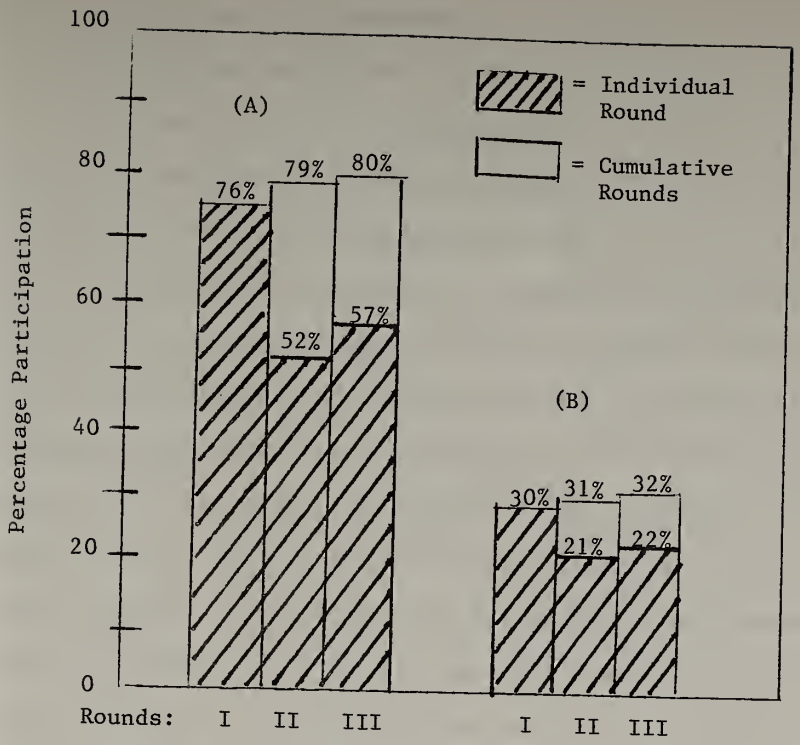
A detailed breakdown of the number of persons invited to participate, as well as those who actually participated, can be found in Table 2. Although it was expected that 50% of the invited population would participate, the rate of participation among the four categories ranged from 20 to 45%, resulting in an overall rate of 40%. A closer examination of Figure 4 will reveal that only the "Goals", "Enrollments", and "Finance" subgroups in the Resource Groups category were able to achieve participation rates of 50% or more.

Another expectation regarding participant involvement was that 80% of those individuals indicating a desire to participate would complete at least one or more of the survey rounds. In Section A of Figure 3 (left side) one can see that no single round had a participation rate above 76%. However, the cumulative participation over three rounds reached the expected 80%, or a total of 92 out of the 115 individuals. When these numbers are compared to the total number of individuals invited to participate, the percentages drop dramatically (see Figure 3, Section B). However, it should be pointed out that in an educational research survey involving a single direct mailing a 20% return is considered good. This Delphi survey resulted not only in a higher than normal rate of return for each of the individual rounds, but also for the cumulative participation over all rounds of the survey.

Table 2

SURVEY POPULATION PARTICIPATION DATA

Category	Total No. Invited	No. Accepting Invit. Number	Percent
I. Constituent Boards			
A. Bd. State Acad. Awards	5	2	.40
B. Regional Comm. Colleges	9	4	.44
C. State Colleges	11	0	0
D. Technical Colleges	8	3	.38
E. Univ. of Conn.	15	5	.33
F. Comm. Higher Educ.	15	4	.27
(Subtotal)	63	16	.25
II. Review/Evaluation Group	12	3	.25
III. Resource Groups			
I. Goals	44	22	.50
II. Enrollments	15	10	.67
III. Facilities	18	7	.39
IV. Programs	26	11	.42
V. Improve. of Opportunity	38	18	.47
VI. Transfer	18	7	.39
VII. Equal Opportunity	31	7	.23
VIII. Finance	21	11	.52
(Subtotal)	211	95	.45
IV. Miscellaneous	5	1	.20
GRAND TOTALS	291	115	.40



Summaries: (A) Based on 115 persons accepting invitations to participate; (B) Based on 291 persons invited to participate.

Fig. 3 -- Percent participation by Round and Cumulative percent participation across all three Rounds

It should be pointed out that some of the data above is reported in relationship to the total number (291) of individuals invited to participate in the Delphi Survey. From this point on all of the data will be reported on the basis of a total of 115 respondents; or, those persons agreeing to participate in the three rounds of the survey. When viewed this way, we note the following statistics regarding this survey population:

20% Did not keep agreement to participate

80% Did keep agreement to participate

17% Participated in only one round

18% Participated in only two rounds

44% Participated in all three rounds

An analysis of the respondents' behavior in selecting the rounds in which they would participate gives us an insight on the participants' understanding of the iterative aspect of a Delphi Survey. Although everyone was urged to participate in all three rounds, approximately 55% of the population either did not participate at all, or chose to participate in only one or two of the three rounds. That the participants may have been unaware of the need to respond in every round is probably due in part to the fact that approximately 92% of the population had no previous experience with the Delphi process. Of course, another reason for this lack of understanding may have been that the instructions were unclear and/or confusing.

Also, the data reveals three other interesting points. First, the participants responding in only one round usually responded in the first round. Secondly, most of those who responded in two rounds seemed to select rounds one and three. On one hand, these individuals felt no need to respond to the same questions in both Rounds I and II. On the other hand, they seemed more willing to respond again when new or different questions were asked, such as in Round III. Finally, it is interesting to note that 76% of those persons participating in all three rounds were members of one of the Resource Groups. However, this

can be viewed as being consistent with the fact that over 80% of the population were members of one of the Resource Groups.

When the Connecticut Commission for Higher Education was designing the process for its master planning activities, an important consideration was the identification of a diverse population to provide input from a cross-section of the professional and non-professional community. The extent to which this was actually achieved can be determined by way of a review of the characteristics of the panel participating in the Delphi Survey. Since everyone invited to participate in this survey had some direct involvement in the Master Plan, the Delphi Panel can be viewed as a self-selected random sample of the entire Master Plan population. Thus, it follows that as a random sample the make-up of the Delphi Panel should reflect the success or failure of the Commission's attempts to obtain broad-based involvement.

In order to establish a profile of the Delphi Survey population, data was collected by way of an information sheet (Appendix D) which each participant was asked to complete if he or she agreed to be part of the Delphi Panel. The categories in which this information was collected can be seen in Table 3. Although an effort was made to gather a variety of information on each participant, these categories were not considered to be mutually exclusive. For example, some overlapping occurs between the categories of "Institution", "Higher Education Relationship", and "Occupation". However, the remaining categories individually do not duplicate any of the other six categories in any way. By breaking down each category into discrete classes we

Table 3

POPULATION PROFILE OF DELPHI PANEL

CATEGORIES	PERCENTAGES BY GROUP			
	Constituent Board	Resource Group	Review & Eval.Group	All Groups
POSITION				
Teacher	12.5	16.0	33.3	15.9
Student	-0-	3.2	-0-	2.7
Ed. Administration	12.5	43.6	-0-	38.1**
Non-Ed. Administration	25.0	21.3	33.3	22.1
Other	50.0	16.0	33.3	21.2
INSTITUTION				
Public Education	53.3	38.3	-0-	39.3**
Private Education	6.7	22.3	33.3	20.5
Public Non-Education	6.7	6.4	-0-	6.3
Private Non-Education	13.3	20.2	33.3	19.6
Other	20.0	12.8	33.3	14.3
REGION* (.01<p<.025)				
Waterbury	18.8	9.5	-0-	10.5
Hartford	43.8	43.2	-0-	42.1**
Storrs	12.5	11.6	-0-	11.4
Groton	-0-	8.4	-0-	7.0
New Haven	12.5	9.5	100.0	12.3
Stamford	12.5	15.8	-0-	14.9
Out-of-State	-0-	2.1	-0-	1.8
HIGHER EDUCATION RELATIONSHIP* (p<.001)				
Mem. Professional Staff	6.3	56.8	-0-	48.2
Non-Member Prof. Staff	93.8	43.2	100.0	51.8**
OCCUPATION				
Business-Industry	26.7	14.7	33.3	16.8
Public Education	40.0	38.9	-0-	38.1**
Private Education	6.7	22.1	-0-	19.5
Non-Professional	6.7	13.7	-0-	12.4
Other	20.0	10.5	66.7	13.3
MASTER PLAN FAMILIARITY* (.025 p<.05)				
No Familiarity	6.3	-0-	-0-	.9
Some Familiarity	12.5	13.7	-0-	13.2
Moderate Familiarity	43.8	55.8	-0-	52.6**
Great Familiarity	37.5	30.5	100.0	33.3
PRIOR DELPHI EXPERIENCE				
Yes	6.3	7.4	33.3	7.9
No	93.8	92.6	66.7	92.1**

* significant difference among groups

** central tendency (mode) of distribution

are able to obtain a rather detailed profile of the survey population.

From a quick review of Table 3 one would suspect that the Delphi Panel was quite a diverse group, in terms of individual roles, locations of residences within the state, and familiarity with the Master Plan and the Delphi Technique. However, closer scrutiny reveals a statistical difference (at the .05 level of significance) between the members of the Constituent Boards, Resource Groups and Review/Evaluation Group in only three of the seven profile categories; i.e., Region, Higher Education Relationship, and Master Plan Familiarity. Before one accepts this as prima facie evidence of a lack of diversity among the Delphi Panelists, one should examine further the data in Table 3.

For example, using the mode as a measure of central tendency, information can be extracted from each category to build a kind of profile on the overall survey population. When this is done the following panel characteristics begin to surface; the panel tended toward being:

1) mostly educational administrators, and students least of all;
2) individuals connected mostly with public education institutions, and non-education public institutions least of all;
3) made up of individuals mostly from the Hartford area, and least of all from the Groton area;
4) mostly persons who were not members of the professional staff of a higher education institution;
5) mostly persons with public education occupations, with the fewest individuals from non-professional job categories;

6) mostly moderately familiar with the Master Plan, with the fewest persons having no familiarity at all;

7) mostly unfamiliar with the Delphi Technique or process.

With this additional information, we can accurately say that the Delphi Panel consisted predominately of educators working in public institutions and living in the Hartford area. Furthermore, these individuals tended to have a better-than-average familiarity with the Master Plan prior to participating in the survey while, at the same time, they had almost no prior experience with the Delphi process. In short, this evidence does not support our initial impression that the Delphi Panel (and, thus, the Master Plan population), consisted of a cross-section of the people in the state. It is also suspected that this finding would be confirmed further if other criteria, such as race, income, and religion were used in this profile study.

Overview of Data Collection

Before discussing the results of the data analysis of the panelists' responses, it will be instructive to the reader to understand how the responses were collected over the three Rounds of the survey. Appendix E contains samples of the instruction and response sheets for all three Rounds. The reader will note that, although the instructions were different for each Round, the questions and Delphi Change Statements were exactly the same for Rounds I and II. This iterative aspect of the Delphi probe was only partially utilized in Round III. In this Round, an entirely different question was asked regarding the fifteen change statements used in the earlier phases of the survey.

As stated earlier a major feature of the Delphi probe which distinguishes it from ordinary surveys is its feedback procedures. In Round II each participant received a summary of the panel's Round I response. (See Appendix F) This summary contained not only the central tendency or median response of the panel's membership, but also the participant's own individual response in that Round. Thus, the participant had an opportunity to compare his or her response with that of the other panelists before responding again in Round II. It should be noted that this feedback procedure was used between Rounds II and III as well --- although in that case the summary was not intended to assist the participants in completing the Round III questionnaire.

The reader will see that the summaries in Appendix F contain quite a bit of information for the participant. For every Delphi Change Statement the summary shows the high and low extremes of the responses to the question on the "impact" and the question on the "timing" of the changes. Within this overall range, the summaries indicate where the inner 50% of the responses fall, or the interquartile range. As a further measure of central tendency, the median response is given for both questions on each change statement.[1]

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[1]In Delphi surveys the median, rather than the mean, is normally used as a statistical measure of central tendency. The reason is that the median is less sensitive than the mean to the presence of a few extreme scores within the distribution. Thus, it is more appropriate to use the median in feedback information to participants, because it gives approximately equal weight to each response no matter where it falls in the distribution. However, it should be noted that the mean will be used in the actual analysis of the data where the emphasis will be placed on inferential statistics. For more discussion on the properties of the median and mean see Edward Minium's Statistical Reasoning in Psychology and Education (op. cit., pp. 62-65).

In the next section of this chapter a detailed analysis of the data collected in all three Rounds will be presented. In the case of Rounds I and II the analysis will focus on the study's objectives and hypotheses outlined in Chapter III. In addition to this a content analysis will be made of those comments made by the Panelists between Rounds II and III of the survey. Basic descriptive statistics will be presented on the Round III responses.

Data Analysis and Summary of Results

The most important aspect of any research is its pay-off. What are the results? Can they be helpful to the organization or institution? To what extent do the results represent new knowledge? Although the Delphi probe can be used to collect current information, or to test certain hypotheses, it also has the capacity to elicit relatively newer and more informed data than most general surveys. The reason for this is its systematic probing of the participants' opinions regarding certain aspects of events that have yet to occur. Depending on who the persons are on the panel --- that is, if they are truly experts in their fields --- these estimates can play an important role in many planning and decision making activities. By way of illustration, the analysis in this section begins below with Table 4, which summarizes the judgments of the panel at the end of Round II of the Survey. These results are the outgrowth of just two questions, "When will these changes occur?", and "What will be their impact?".

TABLE 4

DELPHI PANEL ESTIMATES ON TIMING AND IMPACT OF CHANGES*

THIS CHANGE WILL OCCUR	.BY...	WITH (A)...IMPACT
1. Nearly 1/3 of all instruction will be delivered via TV, newspaper, computer and other media.	Jan. 1989	more than moderate
2. Five related data bases focusing on students, staff, facilities, and finance will form a statewide management/communications information system.	June 1982	moderate
3. Institutional accreditation procedures will include performance evaluations of all programs.	June 1984	more than moderate
4. Number of degree programs in undergraduate and graduate professional training at state colleges will increase 10 - 30%.	Jan. 1984	moderate
5. Supportive programs (such as counseling, day-care, etc.) will be factors in per-student cost calculations.	June 1982	moderate
6. Planning and coordination in higher education institutions will emphasize regional cooperation.	June 1984	more than moderate
7. State funding of higher education will achieve a student support level equal to the 75th percentile among the 50 states.	June 1987	more than moderate
8. Over 40% of all programs of proprietary and non-degree granting institutions will be eligible for "college credit".	Jan. 1985	more than moderate

TABLE 4 - Continued

THIS CHANGE WILL OCCUR.....	.BY...	WITH (A)...IMPACT
9. Almost 5% of all degrees annually will be awarded by the Board for State Academic Awards.	June 1985	moderate
10. Distinction between Adult Education and Continuing Education will be nonexistent.	June 1981	less than moderate
11. Effective implementation of "affirmative action" will be standard operating procedure in all public colleges.	June 1981	moderate
12. Growth rate for part-time undergraduate enrollments will exceed that of full-time undergraduates.	June 1983	more than moderate
13. An equitable transfer system between public and private institutions will be used by more than 50% of all community college students.	June 1982	more than moderate
14. State higher education system will be able to accomodate over 75% of the college-age population.	June 1986	more than moderate
15. Work experience will receive academic credit in all public and most private schools and colleges.	June 1984	more than moderate

* Estimates were made in relationship to a Timing Scale of 1975-1995+ and "Never" (mid-point January 1987); an Impact Scale ranging from "None to very great" (mid-point "moderate").

It is interesting to note that the summary in Table 4 above indicates the panel believed that none of the fifteen changes in higher education would occur before 1981, or after 1989. However, this can be

somewhat misleading, inasmuch as Table 4 shows the group's consensus opinion and not the responses of individual panel members. In fact some members of the panel felt that the changes in "media instruction", "proprietary program credit transfer", and "work experience credit" would become realities as early as 1980. Similarly, the panel's consensus on impact was that each of the fifteen changes would have either a "less than moderate", "moderate", or "more than moderate" impact on the people in the State of Connecticut. Yet, for every one of the changes at least one member of the panel felt that the impact would be "very great". Also, some panel members felt that the following changes would have only a "slight" impact on the people:[2]

No. 5 Supportive programs becoming factors in per-student-cost;

No. 8 Proprietary programs becoming eligible for "college credit";

No. 12 Part-time undergraduate enrollment growth rate exceeding that of full-time undergraduate;

No. 13 Transfer system between public and private schools being used by a majority of community college students;

No. 14 Higher education system able to accommodate over 75% of college-age population.

The above represents a summation of the distribution of responses of the Delphi panelists at the end of Round II. The date analysis of these responses in terms of their relationship to Round I responses, as well as a comparison of subpopulations, will be reported below in

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[2]The reader may have noticed variations in the restatements of the Delphi changes. This is done for brevity and will be repeated in the text, tables, etc. throughout the remainder of this study. For an exact restatement of each change, the reader is referred to Appendix A.

light of the first three objectives and hypotheses of the study outlined in Chapter III. Study results associated with objectives four and five are also reported here.

OBJECTIVE NO. 1

To determine the extent to which various groups associated with the development of the Master Plan differ in their estimations of the implementation or occurrence of specific changes in higher education.

In order to meet this objective it was necessary to separate the survey population into two basic groups; high and low authority groups. The High Authority Group was defined as those participants in the Master Plan who were closest to the major decision making activities associated with higher education operations in the State of Connecticut. In other words, individuals who by virtue of their positions would be instrumental in the adoption or nonadoption of any of the proposed changes recommended by the Master Plan. Therefore, any panelist who was on the Board of Trustees for a state college or university, or who served on the Master Plan's Review and Evaluation Committee, was included in the High Authority Group. This group totalled about 17% of the survey population.

The Low Authority Group consisted primarily of members of the Master Plan's Resource Groups and other participants who did not fit the High Authority category. Every effort was made to cross-match lists of the various subpopulations to eliminate possible duplications. For example, if a panelist who sat on the Board for State Colleges

participated as a member of a Resource Group, that person was considered a member of the High, rather than the Low Authority Group for the purposes of the study.

The research hypothesis associated with Objective No. 1 was established in order to determine if there were any significant differences between the two groups described above in the Rounds I and II responses to the question on the timing of the proposed changes in higher education. This hypothesis was stated as follows:

> In terms of the fifteen Delphi changes, the mean implementation dates of the subpopulation with relatively more authority in higher education equal the mean implementation dates of the subpopulation with less authority.

Table 5 below shows the results of an analysis of variance between the High and Low Authority Groups' responses to the Impact and Timing questions regarding the fifteen changes in higher education. In regard to the question on Timing ("When will these changes occur?"), Table 5 shows no statistically significant difference between the High and Low Authority Groups' Round I responses for 14 out of the 15 of the Delphi Change Statements. At a probability level of .05 ($p<.05$), only the "equal transfer system" change showed a significant difference between the two groups. The Round II responses to the Timing question showed no significant differences between the High and Low Authority Groups on all 15 changes.

The data representing the panelists' judgments as to when these changes in higher education would occur, overwhelmingly points to the conclusion that any differences between the opinions of the High and Low Authority Groups (with one exception) were due to chance.

TABLE 5

ANALYSIS OF VARIANCE* AMONG HIGH AND LOW AUTHORITY GROUPS' MEAN RESPONSES TO IMPACT AND TIMING QUESTIONS IN ROUNDS I AND II

DELPHI CHANGE STATEMENTS	IMPACT QUESTION		TIMING QUESTION	
	Round I	Round II	Round I	Round II
1 Media Instruction	.292	.063	.770	.129
2 State Info. System	.214	.044	1.208	.815
3 Performance Eval. Criteria	.061	1.610	.734	.241
4 State College Prof. Degree	3.219	.412	.639	.476
5 Supportive Programs	.054	3.103	.019	.797
6 Regional Plan Coordination	1.185	.150	.189	2.543
7 FTE State Funding	.164	.016	.096	.004
8 Proprietary Pro. Credit Transfer	.137	.598	.252	.400
9 BSAA Degree Awards	.0	.045	2.708	3.338
10 Adult Ed. - Cont. Ed. Merger	.605	.432	.767	.002

TABLE 5 - Continued

DELPHI CHANGE STATEMENTS	IMPACT QUESTION Round I	Round II	TIMING QUESTION Round I	Round II
11 Affirmative Action	.0	.759	.018	.003
12 Part-time Undergrad. Enrollmt.	.417	.128	.442	1.826
13 Equal Transfer System	.256	.772	4.830**	2.933
14 Higher Educ. System Accom.	1.712	1.881	.007	.392
15 Work Experience Credit	.043	.122	2.808	1.034

* F Ratios reported for Change Statements by Question and Round

** $p < .05$

OBJECTIVE NO. 2

To determine the extent to which various groups associated with the development of the Master Plan differ in their estimations of the potential impact of specific changes in higher education.

This objective was met in a manner similar to that of Objective No. 1. An analysis of variance was calculated between the High and Low Authority Groups' responses in Rounds I and II to the question, "Assuming these changes will occur, what will be their impact?". The research hypothesis tested in this case was:

> In terms of the fifteen Delphi Changes, the mean impact estimates of the subpopulation with relatively more authority in higher education equal the mean impact estimates of the subpopulation with less authority.

Table 5 above shows the results of the analysis. Again, using a $p < .05$ level of significance, without exception, none of the responses to the "impact" question in either Round were seen to be significantly different between the two groups. Interestingly, the analysis shows that for two of the changes, "BSAA Degree Awards" and "Affirmative Action", there were absolutely no differences between the judgments of the High and Low Authority Groups in Round I. However, this "no difference" relationship did not continue into Round II.

OBJECTIVE NO. 3

To determine the value of a modified Delphi survey as a supplementary communication/input technique for citizen participation in the development of higher education in the state.

In terms of the most common definition of the Delphi Method, Objective No. 3 is, perhaps, the most important of the five objectives. In order to meet this objective, it was necessary to compare the responses of individual groups or subpopulations between Rounds I and II. This idea of determining the differences between an individual's responses over several rounds is one of the major features of the Delphi Technique, no matter how much the overall design might vary from survey to survey.

Two different methods of analysis were used to test the hypothesis associated with this objective. Although different in approach, both methods involved measuring differences in central tendency by way of paired observations. These tests are briefly described below:

> Wilcoxon Matched - Pairs Ranked - Signs Test - The differences between the pairs of observations is analyzed as in the sign test; however, the magnitude of the difference is also used in the analysis. The differences are ranked without regard to sign; if the two variables are essentially the same, the number and magnitude of ranks for positive and negative differences should be approximately the same.[3]

> T-Test - ...provides the capability of computing student's t and probability levels for testing whether the difference of two sample means is significant...for paired observations arranged case-wise, a test of treatment effects is performed...the tests are for equality/inequality of the means...[4]

The research hypothesis developed to carry out Objective No. 3 is as follows:

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[3]"Update Manual, Version 5.0", SPSS (Statistical Package for the Social Sciences)-6000, University Computing Center, University of Mass. (Amherst, Mass., September, 1973).

[4]"Update Manual, Version 5.8", SPSS-6000, Vogelback Computing Center, Northwestern University (Evanston, Ill., August, 1974).

In terms of the fifteen Delphi changes, the mean responses of the panel to Round I questions equal the mean responses to the same questions in Round II.

Table 6 below shows the results of the Wilcoxon test of this hypothesis. Here we find the results indicate no statistically significant differences between the Rounds I and II responses to the question on "impact" of the Delphi Changes in higher education. Table 7 shows a similar result in regard to the question on the "timing" of these changes. In fact the BSAA Degree Awards" change statement evoked no difference whatsoever between the Rounds I and II opinions regarding when these changes would occur.

The second test of the hypothesis associated with Objective No. 3 was the T-Test. Overall the results produced by this method of analysis were similar to those produced by the Wilcoxon Test. However, this analysis was carried out on selected subpopulations, rather than the survey population as a whole. As expected, this approach to this part of the data analysis produced some interesting pieces of information.

For example, Table 8 is broken down into five occupational subgroups and two authority subgroups. It shows the results of a T-Test analysis of differences between each group's Round I and II responses to the impact question on all 15 change statements. (The reader should note that the "Occupational Groups" and "Authority Groups" populations are really one and the same. In short, Table 8 shows two ways to look at the same population.) Here we see that for the "Media Instruction" change statement the Round II response of the High Authority subgroup was significantly different from its Round I response. This is contrasted to the results for the five Occupational subgroups on the same

TABLE 6

WILCOXON MATCHED-PAIRS RANKED-SIGNS TEST FOR DIFFERENCES BETWEEN ROUNDS I AND II ON IMPACT QUESTION

Delphi Change Statement	Sums of Ranks Positive	Negative	Computed Z	2-Tailed Probability
1. Media Instruction	62.0	43.0	-.5964	.5509
2. State Info. System	70.5	49.5	-.5964	.5509
3. Performance Eval. Criteria	96.5	179.5	-1.2622	.2069
4. State College Prof. Degree	140.5	189.5	-.5920	.5539
5. Supportive Programs	84.0	192.0	-1.6424	.1005
6. Regional Plan - Coordination	64.5	71.5	-.1810	.8564
7. FTE State Funding	122.0	109.0	-.2259	.8213
8. Proprietary Program Credit Transfer	141.5	134.5	-.1065	.9152
9. BSAA Degree Awards	135.0	141.0	-.0912	.9273
10. Adult Ed.-Cont. Ed. Merger	150.0	103.0	-.7629	.4455
11. Affirmative Action	102.5	87.5	-.3018	.7628
12. Part-time Undergrad. Enrollment	154.5	170.5	-.2153	.8296
13. Equal Transfer System	76.0	114.0	-.7646	.4445
14. Higher Education System Accommodation	97.0	113.0	-.2987	.7752
15. Work Experience Credit	66.5	86.5	-.4734	.6359

TABLE 7

WILCOXON MATCHED-PAIRS RANKED-SIGNS TEST FOR DIFFERENCES BETWEEN ROUNDS I AND II ON TIMING QUESTION

Delphi Change Statement	Sums of Ranks Positive	Negative	Computed Z	2-Tailed Probability
1. Media Instruction	13.5	31.5	-1.0662	.2863
2. State Info. System	46.5	44.5	-.0699	.9443
3. Performance Eval. Criteria	60.5	149.5	-1.6613	.0967
4. State College Prof. Degree	76.5	59.5	-.4395	.6603
5. Supportive Programs	70.0	120.0	-1.0061	.3144
6. Regional Plan - Coordination	64.0	107.0	-.9363	.3491
7. FTE State Funding	37.0	68.0	-.9730	.3305
8. Proprietary Program Credit Transfer	56.0	35.0	-.7338	.4631
9. BSAA Degree Awards	33.0	33.0	0	1.0000
10. Adult Ed. - Cont. Ed. Merger	111.0	60.0	-1.1105	.2668
11. Affirmative Action	39.0	66.0	-.8475	.3967
12. Part-time Undergrad. Enrollment	23.5	42.5	-.8447	.3983
13. Equal Transfer System	27.0	39.0	-.5335	.5937
14. Higher Education System Accommodation	124.0	107.0	-.2954	.7677
15. Work Experience Credit	54.0	37.0	-.5940	.5525

change statement. In this case the Rounds I and II responses of each of these subgroups were not significantly different. These results tend to confirm similar findings outlined in Table 6 above, where the differences between the Rounds I and II responses for the population as a whole were not found to be significant.

Table 8 also shows the Nonprofit subgroup's Rounds I and II responses on the "Work Experience Credit" change statement to be significantly different at the $.02<p<.05$ level. In Table 9 only one subgroup, "Other", had significantly different responses between the two Rounds. The change statement involved here was "Adult Education - Continuing Education Merger". It should be pointed out, however, that despite a few instances to the contrary cited above, the overall T-Test results shown in Tables 8 and 9 confirm the Wilcoxon Test results. (See Tables 6 and 7). It must be concluded that the survey group's Round II mean responses were not significantly different from their Round I mean responses.

At this point the reader might be assuming that the lack of significant differences between the mean responses of Rounds I and II is an indication of the lack of developing consensus across the two rounds of the survey. However, a further analysis shows that the Delphi characteristic of consensus building did occur over the two rounds, despite the fact that the mean responses across rounds were relatively equal. Whereas, the analysis above focused on a comparison of the centrality of responses in the two rounds, the analysis and results described below focus on a comparison of the variability of responses in the two rounds.

TABLE 8

T-TESTS OF SIGNIFICANT DIFFERENCES BETWEEN ROUNDS I AND II RESPONSES OF INDIVIDUAL GROUPS TO IMPACT QUESTION

DELPHI CHANGE STATEMENTS	OCCUPATIONAL GROUPS					AUTHORITY GROUPS**	
	Bus./ Indust.	Pub. Educ.	Priv. Educ.	Non-Prof.	Other	High	Low
1. Media Instruction	1.50*	.27	-1.00	0	-1.00	*** 2.83	-.77
2. State Info. System	.36	1.14	.56	-1.00	0	1.50	.23
3. Performance Eval. Criteria	-1.63	-1.45	.56	.35	- .54	- .82	-1.10
4. State College Prof. Degree	-1.14	1.14	0	-1.18	-1.00	-1.96	- .50
5. Supportive Programs	- .69	- .57	0	-1.55	-1.54	- .32	-1.95
6. Regional Plan-Coordination	- .43	0	-1.00	.89	0	.56	- .32
7. FTE State Funding	0	.57	- .32	0	- .35	- .43	.37
8. Proprietary Prog. Credit Transfer	- .90	1.23	-1.15	- .30	- .35	- .63	.12
9. BSAA Degree Awards	-1.00	.96	- .32	.55	-2.24	0	.15
10. Adult Ed. - Cont. Ed. Merger	.29	.36	.97	.48	0	- .23	1.30
11. Affirmative Action	.69	- .72	1.00	0	0	-1.00	.55
12. Part-time Undergrad. Enroll.	.17	-1.79	0	1.35	0	- .43	.11
13. Equal Transfer System	- .55	-1.02	1.00	- .35	- .54	-1.00	- .94
14. Higher Educ. System Accom.	- .55	.16	-1.49	1.00	-1.00	.80	- .45
15. Work Experience Credit	- .36	-1.53	.43	*** 2.83	0	.56	- .85

* obtained t values of difference between Rounds I and II responses

** High = Constituent Board and Review/Evaluation Group members

*** $.02 < p < .05$ (two-tailed)

TABLE 9

T-TESTS OF SIGNIFICANT DIFFERENCES BETWEEN ROUNDS I AND II RESPONSES OF INDIVIDUAL GROUPS TO TIMING QUESTION

DELPHI CHANGE STATEMENTS	OCCUPATIONAL GROUPS					AUTHORITY GROUPS**	
	Bus./ Indust.	Pub. Educ.	Priv. Educ.	Non-Prof.	Other	High	Low
1. Media Instruction	1.00*	.93	-1.00	0	-1.58	.56	-1.48
2. State Info. System	0	-1.71	.43	1.33	0	.56	0
3. Performance Eval. Criteria	-1.15	- .37	-1.40	- .26	-1.00	- .90	-1.60
4. State College Prof. Degree	.43	0	- .80	1.44	.41	0	.70
5. Supportive Programs	0	- .53	-1.00	.44	.54	- .69	- .44
6. Regional Plan - Coordination	1.00	0	- .80	- .79	0	.69	-1.42
7. FTE State Funding	-1.00	.44	-1.41	- .55	0	-2.29	0
8. Proprietary Prog. Credit Transfer	- .56	0	0	1.55	0	.56	.63
9. BSAA Degree Awards	.55	.57	-1.00	-1.55	0	.56	0
10. Adult Ed. - Cont. Ed. Merger	.89	0	-1.00	.88	4.00	0	1.42
11. Affirmative Action	-1.00	- .85	1.49	-2.12	.54	1.00	-1.54
12. Part-time Undergrad. Enroll	1.00	-1.14	1.00	-1.55	0	.56	-1.22
13. Equal Transfer System	.43	0	1.00	- .55	-2.14	-1.36	-1.16
14. Higher Educ. System Accom.	0	0	.71	- .79	.54	1.00	0
15. Work Experience Credit	2.24	- .77	1.00	0	-1.00	- .56	.65

* obtained t values of difference between Rounds I and II responses

** High = Constituent Board and Review/Evaluation Group members
Low = Resource Group members

*** $.01 < p < .02$

In order to carry out this additional analysis, a T-Test for significant differences between the means of the two rounds was conducted on the Delphi panel as a whole. From the results of this test the standard deviations for each change statement in each round (30 in all) were determined.

Table 10 shows these standard deviations and the differences between rounds. With but two exceptions, the population variances in 93% of the cases decreased from Round I to Round II. (The exceptions are change statements 6 and 8 in the "Timing" column.) Since decreasing variability indicates a decreasing difference between the high and low scores of the distribution, it can be said that the Round II responses were "less spread out" along the distribution continuum than they were in Round I. Therefore, with more responses falling toward the central portion of the distribution (interquartile range) in Round II than in Round I, one can assume that there was greater consensus among the panelists in Round II.

To further substantiate the conclusion that greater consensus was developed over the two rounds, a special T-Test was conducted to determine how many of the 30 changes in variability were statistically significant.[1] Table 10 shows that 16 or 57% of the cases of decreasing variability were found to be statistically significant at the .05 level. The two cases of increasing variability between rounds were not statistically significant.

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[1]Thad R. Harshbarger, Introductory Statistics: A Decision Map, (New York: The MacMillan Company, 1971), pp. 240-243.

TABLE 10

COMPARISON OF STANDARD DEVIATIONS BETWEEN ROUNDS I AND II RESPONSES TO IMPACT AND TIMING QUESTIONS

DELPHI CHANGE STATEMENTS	IMPACT QUESTION		TIMING QUESTION	
	Std. Deviations	Difference	Std. Deviations	Difference
1. Media Instruction	1.567* 1.359	.208**	1.297 1.145	.152**
2. State Info. System	1.583 1.446	.137**	1.197 1.106	.091
3. Performance Eval. Criteria	1.787 1.632	.155**	1.339 1.265	.074
4. State College Prof. Degree	1.571 1.483	.088	1.433 1.260	.173**
5. Supportive Programs	1.564 1.372	.192	1.315 1.139	.176
6. Regional/Plan Coordination	1.536 1.342	.194**	1.170 1.191	.079
7. FTE State Funding	1.610 1.399	.211**	1.532 1.365	.167**
8. Proprietary Prog. Credit Transfer	1.545 1.332	.213	1.253 1.260	.007
9. BSAA Degree Awards	1.599 1.531	.068	1.172 .944	.228**
10. Adult Ed. - Cont. Ed. Merger	2.025 1.906	.119	1.473 1.156	.317**
11. Affirmative Action	1.410 1.283	.127**	1.323 1.280	.043
12. Part-Time Undergrad. Enroll.	1.610 1.347	.263**	1.356 1.270	.086**
13. Equal Transfer System	1.486 1.313	.173	1.167 1.157	.010
14. Higher Educ. System Accom.	1.644 1.433	.211**	1.535 1.303	.232**
15. Work Experience Credit	1.509 1.454	.055	1.110 .988	.122**

* upper number = Round I; lower number = Round II

** $p<.05$, based on correlated T-Test for significance

OBJECTIVE NO. 4

To identify from among a selected list of institutions and major constituent groups those which will be most helpful and those which will be most hindering to the implementation of specific changes in higher education.

The data analysis related to this objective primarily involved the calculation of descriptive statistics. Whereas, the first three objectives discussed above focussed on the survey questions in Rounds I and II, Objective No. 4 has to do with Round III of the survey. Here the participants were asked to identify the institution or group that most promoted or hindered each of the fifteen changes in higher education. The results of this analysis are, indeed, interesting and worthy of comment.

The eight variables identified as promoting or hindering higher education changes include state and federal government, public and private education, business, students and faculty. Most of these variables can be found in Table 11, which shows the institution or group with the largest percentage of responses for promoting or hindering each of the changes. It is interesting that "private education" and "faculty" were not cited by any of the respondents as promoting any one of the fifteen changes. Similarly, it seems that the "federal government", "business/industry", and "students" were the only institutions or groups that would not hinder at least one of the fifteen changes.

On the basis of 66 persons participating in Round III, a total of 990 votes could have been cast for the single institution or group that

TABLE 11

INSTITUTIONS/GROUPS MOST PROMOTING OR HINDERING DELPHI CHANGES

DELPHI CHANGE STATEMENTS	PROMOTED MOSTLY BY	% RESPONSE	HINDERED MOSTLY BY	% RESPONSE
1. Media Instruction	Business/ Industry	.35*	Faculty	.74*
2. State Info. System	State Government	.76	Private Education	.33
3. Performance Eval. Criteria	State Government	.58	Faculty	.55
4. State College Prof. Degree	Public Education	.44	State Government	.47
5. Supportive Programs	Students	.39	State Government	.53
6. Regional Plan. - Coordination	State Government	.61	Public Education	.29
7. FTE State Funding	Public Education	.61	State Government	.70
8. Proprietary Prog. Credit Transfer	State Government	.27	Faculty	.41
9. BSAA Degree Awards	State Government	.52	Faculty	.42
10. Adult Ed. - Cont. Ed. Merger	Students	.35	Other	.24
11. Affirmative Action	Federal Government	.55	Faculty	.39
12. Part-time Undergrad. Enroll	Students	.55	Other	.24
13. Equal Transfer System	Students	.46	Faculty	.35
14. Higher Ed. System Accom.	Public Education	.53	State Government	.55
15. Work Experience Credit	Students	.38	Faculty	.67

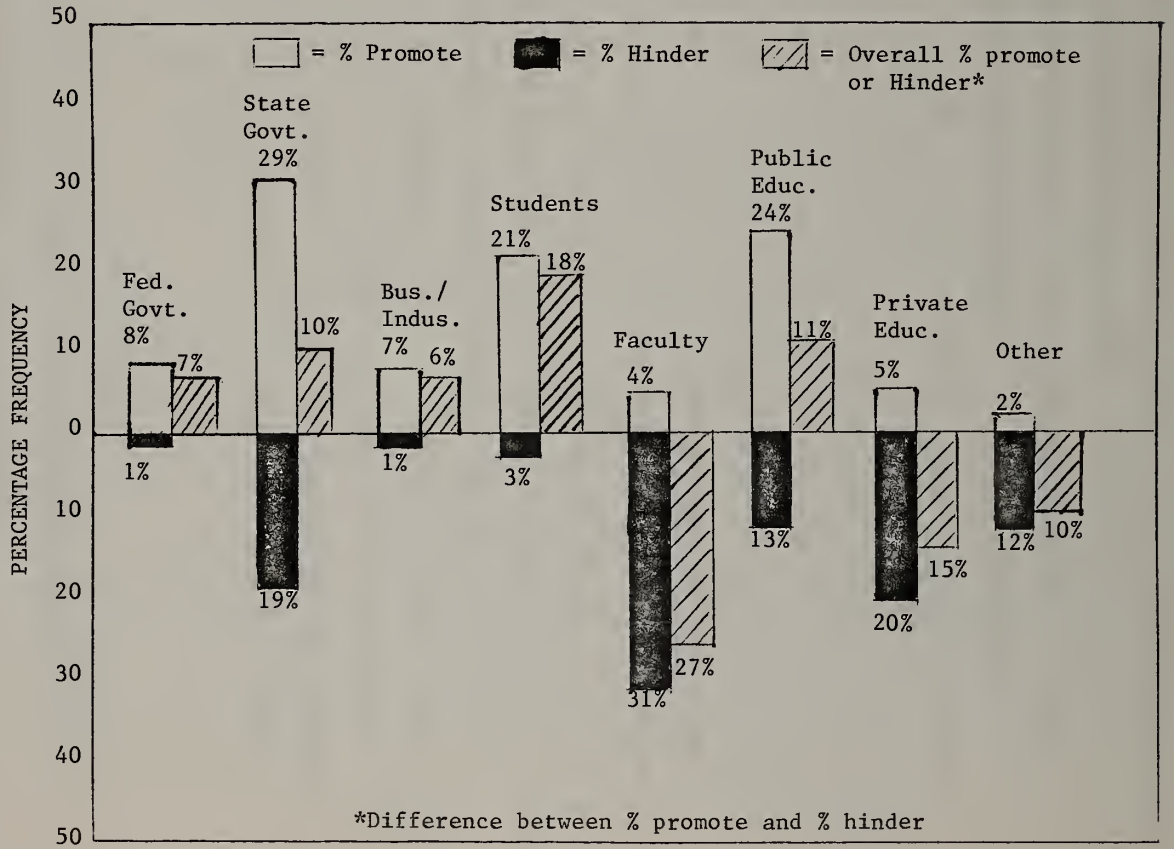
* Based on the central tendency (mode) among the eight variables

the panelists felt most promoted or hindered all 15 changes in higher education. In other words, if every participant cited "private education" as the institution that most promoted each of the 15 changes in higher education, then "private education" would be identified 990 times, with no other institutions or groups being cited for any of the 15 changes.

From Table 11 above, the reader can discern what the percentage of responses were for each change statement in terms of the "promote" and "hinder" categories. However, it is not possible to tell what portion of the 990 possible responses in each category were devoted to which of the 8 institutions or groups. This is the function of Figure 4. Assuming the Delphi panelists were fairly expert in their knowledge of higher education, one can almost use the data in Figure 4 as predictions regarding the manner in which these changes may or may not become reality.

For example, Table 11 shows "State Government" and "Students" as the institution and group mostly promoting 10 (5 each) of the fifteen changes in higher education. However, Figure 4 shows "State Government" receiving 29% of the citations for promoting these changes, while "Students" received only 21%. Based on these figures one would think that "State Government" will be primarily responsible for promoting the greatest number of changes in the future. Yet, this would not be entirely accurate, since consideration must be given to what changes this or any other institution or group will tend to hinder in the future. Assuming all fifteen changes described in this study are worthy of be-

Fig. 4 -- Percentages of Delphi panel in Round III citing institutions or groups as promoting or hindering higher education changes.



ing implemented, then one would look for the institution or group most likely to promote the greatest number, while at the same time hindering the least number, of the fifteen changes. The following formula illustrates this approach to the analysis:

Formula: % promote - % hinder = overall % promote or hinder

Examples:

Business/Industry	Private Education
7% - 1% = 6% promote	5% - 20% = -15% hinder
(promote) (hinder)	(promote) (hinder)

A review of the above example and the data in Figure 4 will reveal that "Students" must be considered the overall "promoters" of the fifteen Delphi Changes, while the "Faculty" become the overall "hinderers" of these changes. Also, it can be predicted that "State Government" is likely to be more active than the "Federal Government" in regard to these changes, with the former outstripping the latter in its predicted capacity to promote or hinder these changes. Similarly, Figure 4 shows "Public Education" promoting more changes than "Private Education". Finally, it is interesting to note that all but 3 of the 8 institutions or groups were seen by the Delphi panelists as promoting overall the fifteen changes in higher education. The institutions or groups most cited for hindering overall these changes were "Faculty", "Private Education", and "Other".

OBJECTIVE NO. 5

To obtain specific and general feedback regarding the perspectives of selected populations on the Master Plan to date.

In one sense, the data showing how this objective was met has already been presented. The discussions of the data analysis associated with Objectives Numbers 1-4 above provide some insight into the thoughts and opinions of the survey participants regarding the various recommendations outlined in the Connecticut Master Plan for Higher Education.

In addition, it should be pointed out that approximately 20% of the total survey population (or 38% of those responding in Round II) wrote specific comments about why their Round II responses in certain areas deviated from the inner 50% of responses made by the survey participants in Round I. Those participants who wrote comments averaged about two comments relating to the Timing Question on certain change statements, and about four comments relating to the Impact Question on certain change statements.

There were a total of 134 specific comments, plus 8 general comments. In terms of the 3 major population subgroups (see Table 2), only the Review/Evaluation Group failed to have any of its members make written comments during this phase of the survey. However, the Resource Groups contributed 77% of the comments on "Timing" and 85% of the comments on "Impact". The members of the Constituent Boards provided 23% of the comments on "Timing" and 15% of the comments on "Impact". Comments on specific change statements can be found in Appendix G. More general comments are listed below as a means of providing the reader a flavor of what the participants chose to emphasize in their written statements:

A. General Comments Regarding Overall Questions and Change Statements

Code No.	Comment
102	I tend to be very anxious to see some meaningful changes in Connecticut higher education, both public and private. But long experience as a participant in discussions between the public and private levels about goals and their implementations have made me skeptical about the achievement of a meaningful consensus, even over a long period of time. Moreover, both faculty members and administrators will tend to resist truly fundamental changes, allowing only the accretion of token changes over a long period of time.
037	In those questions where my answers were very different, I believe my beliefs were not strongly felt.

B. General Comments Regarding "Impact" Question and Change Statements

Code No.	Comment
026	I am at a loss to understand what you are trying to accomplish. Do you mean that I should now modify those opinions in which I seem to differ from the others? Why? The ambiguity of the word "impact" is sufficient to explain our differences.
087	Where my answers vary significantly from the majority, I can only say "that's my opinion". In some cases I feel optimism and others pessimism. It seems that I don't consider these issues to have as much impact on the people as your other respondents do. Maybe I need a better definition of "impact".
102	Should the changes described occur in a truly effective and effectual manner, the effect upon faculty, administrators, student body, legislators, and the general public will be extremely profound.

C. General Comments Regarding "Timing" Question and Change Statements

Code No.	Comment
106	You can tell I'm a cynic.
102	The job of educating the varieties of personnel involved, including the taxpayer, so that the changes may be completely effectuated and truly effective will require 15-20 years.

Code No.	Comment
023	My time schedule may be a bit slower than Median, but I don't see things happening as fast as people would like. There's always opposition.

Summary of the Findings

The purpose of this section is to summarize the results of the data analysis in the form of specific Findings of the study. These statements or findings are directly related to the five objectives and three hypotheses of the study. (A separate section in Chapter V will provide the reader an example of how all the data associated with a given change statement, including any written comments by the participants, can be combined to give an overall perspective of the panelists' opinions concerning the specific change in higher education).

Finding No. 1 - In terms of the fifteen Delphi changes, the mean implementation dates of the subpopulation with relatively more authority in higher education equalled the mean implementation dates of the subpopulation with less authority. More specifically, there were generally no statistically significant differences between the High and Low Authority Groups' responses in Rounds I and II of the Delphi probe. The only exception to this was the change statement on "equal transfer system" in Round I.

Finding No. 2 - In terms of the fifteen Delphi changes, the impact estimates of the subpopulation with relatively more authority in higher education equalled the mean impact estimates of the subpopulation with less authority. This is similar to Finding No. 1, and seems to confirm the fact that, although there may have been differences

between individual participants, there were no significant differences between the opinions and judgments of the High and Low Authority Groups.

Finding No. 3 - In terms of the fifteen Delphi changes, the mean responses of the panel to Round I questions equalled the mean responses to the same questions in Round II. In other words, the survey population made no significant changes in their responses between Rounds I and II. (See Tables 6-9). This seems to point to the conclusion that the normal Delphi Survey characteristic of developing greater consensus among the survey group across several iterations or rounds of the survey did not occur in this current study. However, further analysis showed that 28 of the 30 distributions of responses decreased in variability over the two rounds of the survey. With over half of these decreases being statistically significant, a strong claim can be made regarding the fact that there was greater consensus in Round II over Round I. (See Table 10).

Finding No. 4 - In terms of eight selected institutions or major constituent groups, five were seen to be likely promoters of the fifteen Delphi changes in higher education, while three were viewed as being hinderers to those changes. More specifically, the Delphi panel predicted which institution or group would mostly promote and which would mostly hinder each of the fifteen changes. Overall, the panel predicted "Students" to be best promoter of these changes, followed by "State Government". They also saw that these same changes would be hindered most often by "Faculty", followed by "Private Education".

Finding No. 5 - In terms of the survey population as a whole, 20% of the participants felt enough of an investment in the study to write specific comments regarding their reasons for responding in certain ways. This is unusual in light of the fact that each participant was asked to respond at least three different times to survey questions. The specific comments were made by individuals whose Round II responses deviated from the inner 50% of the distribution of responses in Round I.

In regard to comments about the "Timing" of the higher education changes, there was a wide range of opinions given. Some writers cited trends which contradicted the opinions of others. Among the issues raised were the lack of state funding and institutional cooperation, and a general parochialism. Some writers gave no particular rationale for their judgements, while others cited preliminary evidence that the change in question was already underway.

Comments regarding the "Impact" of the changes also ranged wide in scope. However, what is significant here is that the estimates of impact (whether "very great" or "very little") were commented upon both by respondents who felt the impact would be positive, as well as by those who felt the impact would be negative. Despite the fact that the Impact Question was carefully stated in order to minimize professional and personal bias, the written comments in this area seem to indicate that, in general, the survey population may have had some difficulty responding to this aspect of the Delphi probe.

CHAPTER V

CONCLUSION

Facilitating Citizen Participation

"To what extent can an on-going assessment of citizen opinion aid in the facilitation of citizen participation in educational decision making?" The reader will recall that in Chapter I we indicated that this would be the Central Question of this study. The discussions in Chapter I and II clearly point out that involvement in those activities that establish the nature, arrangements, direction and purpose of public education services is important from more than just a public relations point of view. Public education not only represents one of the largest collective investments made by the citizens of a community, but it also represents the single most important resource by which individuals can acquire the skills to take advantage of the opportunities offered by a free and democratic society. Not just any level or kind of citizen participation in educational decision making will have a beneficial effect on the community. What is crucial is the depth and quality of that participation---a factor which is as much influenced by those who provide educational services, as by those who consume them.

In today's fast-changing society, educational planners and administrators can no longer rely solely on the "wisdom" and "current expertise" of citizens who sit on school or college boards, as a means of

insuring that educational programs remain relevant to the current and future needs of students. This observation is clearly confirmed by the dramatic increase during the past decade in the number of advisory committees established to gather "grass-roots" input and support for major educational issues. However, educators themselves are finding it harder and harder to place a great deal of significance on this kind of participation, primarily because of the difficulty of assuring that such committees truly represent the entire community. Educators faced with this dilemma are caught in a "no win" situation when it comes to making major policy or program decisions.

Important social changes are seldom made swiftly but, rather, gradually in incremental steps. Educational changes occur in a similar manner, although the time between recognizing the need to change and the change itself is fast decreasing. The incremental nature of change requires many "mid-course" corrections before the ultimate goal is achieved. Single-incident opportunities for citizens to participate in educational decision making is fast becoming obsolete. For example, many educational institutions regularly undertake to evaluate the effectiveness of their programs and activities by soliciting the opinions of staff, students and the public. Less often are these same constituencies allowed to make recommendations regarding the changes that should take place based on the evaluation results.

When considering the points made above, along with other information found in earlier chapters of this study, it would seem that citizen participation would be greatly facilitated by an on-going assessment of citizen opinion. It is important to note that "deciding"

is not the beginning nor the end of the activity that brings about a major change. The decision making activity is more like a process that begins with the recognition that a decision is necessary, followed by an examination of the alternatives from which a decision option is selected and implemented, ending with an evaluation of the probable impact or effectiveness of that decision. Provisions for citizen participation in each of these three aspects of the decision making activity will do much to guarantee that the final outcome is compatible with the needs, desires, and expectations of the public.

For example, in this current study the participants had previously been involved in the development of the Master Plan for Higher Education in Connecticut. Not only did they participate in the creation of the recommendations for changes in higher education, but they also had an opportunity to follow this up with their own estimates of the probable timing and impact of these changes on the people in the state.

Delphi Probe of Citizen Opinion

The Preliminary Question of this study called for an examination of the extent to which the Delphi Technique is an appropriate method for undertaking an on-going assessment of citizen opinion. The answer seems evident from a review of the literature and the result of the Delphi Survey conducted as part of this study. The Delphi Technique is perhaps the only opinion polling strategy that can be used through several iterations with the same population and still produce new knowledge with each iteration. This factor alone makes it almost uniquely qualified as the vehicle through which an on-going assessment

of citizen opinion can be generated. However, there are other reasons, a few of which are discussed below.

First of all, the Delphi is sufficiently flexible in its design requirements that it can be used in a variety of situations. For example, a Delphi can be used as a self-generating technique for identifying the key issues or concerns in the minds of the survey population. Once these issues have been identified, additional rounds of the survey could be designed to produce a consensus among the participants, or to highlight those views that seem totally divergent from the majority opinion. In this current study a major purpose was to validate the degree to which there was general agreement among the various groups involved in the development of the Master Plan for Higher Education recommendations. Although the study showed genuine consensus among the groups over two rounds of the survey, there were many minority comments expressed reflecting varying degrees of doubt, pessimism, optimism, and outright disagreement regarding the opinions of the majority.

Secondly, both the literature and this current study confirm the fact that the Delphi Technique far surpasses most other alternatives as an effective structure for promoting meaningful communication between groups. (Of course, this statement presupposes a need for two or more groups to communicate over some existing problem which must be solved as efficiently and as effectively as possible.) By way of highlighting this Delphi characteristic, Murray Turoff[1] points out

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[1]Turoff, op. cit., p. 317.

five situations where the use of this technique is most appropriate:

1. Where the individuals needed to contribute knowledge to the examination of a complex problem have no history of adequate communication and the communication process must be structured to insure understanding;

2. Where the problem is so broad that more individuals are needed than can meaningfully interact in a face-to-face exchange.

3. Where disagreements among individuals are so severe that the communication process must be referreed.

4. Where time is scarce for the individuals involved and/or geographical distances are large, thereby inhibiting frequent group meetings.

5. Where a supplemental group communication process would be conducive to increasing the efficiency of the face-to-face meeting.

The third reason why the Delphi Technique is a good vehicle for assessing citizen opinion is somewhat related to the second reason. Of the many survey or polling instruments, the Delphi probe tends to give the participant a sense that his or her opinion "will be heard". The feedback feature of the Delphi not only provides the participant an opportunity to review his judgements in relation to those of others, but it also affords an opportunity for the participants to offer their panelists specific comments on why they feel their positions on given issues are justified. This has a positive effect on the participants, in that each one has the potential for becoming a change agent among their peers, without risking the uncomfortableness of face-to-face confrontations. Individual growth from having participated in the Delphi exercise is a real possibility because of the new information generated in the course of each round of the survey. Finally, a few writers have explained that the Delphi probe can have a positive impact

on an organization's attempts to promote the idea of planning and research as an important management function.

A fourth reason for using the Delphi Technique when assessing citizen opinion has to do with its focus on the future. Even when the major issue grows out of an immediate crisis, a Delphi probe can be designed to solicit responses to questions which, by being focused on the future, tend to minimize the negative effect of the emotionalism surrounding the current manifestation of that crisis. An inquiry of this kind can produce individual forecasts of specific events, or scenarios on the future climate, conditions and general state of affairs of the institution(s) in question. For administrators and planners, such forecasts provide "sneak previews" of the probable future desires or expectations of the population for whom they are now or soon will be providing services. The next section of this Chapter will deal primarily with this kind of future-focussed information, and how educational administrators and planners can use the data from this study to improve higher education in Connecticut.

Delphi Data and Decision Making

Using the current study as a basis for this exercise, the intent here is to link together the various data relating to specific change in higher education and produce a plausible scenario on the possibility and the practicality of the change. The scenario will be followed by a description of some planning strategies which higher education planners and administrators might employ to bring about the change more effectively and efficiently, and/or to forestall or minimize the

poor timing and possible negative impact of the impending change. Of course these strategies will tend to be more global than specific in their relationship to individual institutions or population groups.

Delphi Change Statement No. 13

An equitable transfer system, operating between all public and cooperating private institutions will be in common use by large numbers of students (50% or more) on the community college level.

Scenario (No. 13)

An equal transfer system is predicted to be fully implemented within the State of Connecticut by 1982. There will be a "more-than-moderate" impact of this change on the people in the State (see Table 4). Apparently, there is very little difference overall in the timing and impact estimates of this change between individuals who have direct access to decision making in higher education and those who do not (see Table 5). The general consensus implied by this lack of difference is further confirmed by the fact that when asked to respond twice to the same questions the participants in this study maintained their original opinions (see Tables 6-9). Therefore, the full implementation of an equal transfer system in higher education will probably occur at the time and with the impact originally estimated.

Pressure for this change is likely to come from students, while faculty members will tend to resist it (see Table 10). Some of those who disagree with the above timing and impact estimates feel that an equal transfer system will never be realized because the goal of a community college is not to prepare students for four-year schools (see Comment 053, Timing Question, Change Statement No. 13). Others

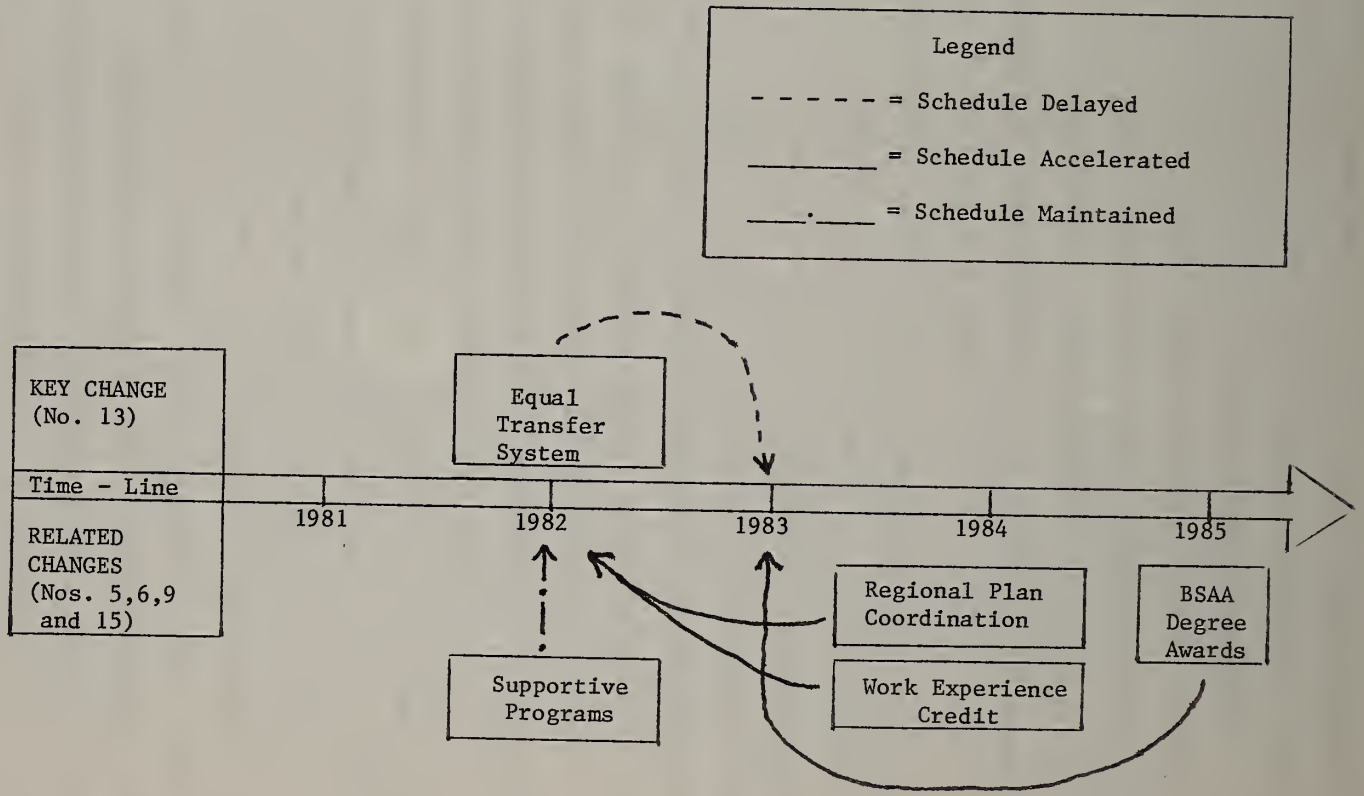
who disagree with these estimates feel that the impact of this change on the people in Connecticut will be very great. However, while some feel there will be a very great "positive" impact, others feel that an equal transfer system will have a very great "negative" impact on private colleges because they value their opportunity to be selective in their admissions activities (see Comments 003 and 096, Impact Question, Change Statement No. 13).

Recommended Planning Strategies (No. 13)

First, every effort should be made to adjust the timing for achieving Change No. 13, along with other related changes, in order to create the best possible climate in which the change will occur. For example, Change No. 13 will probably occur in 1982. However, three out of four important related changes are not scheduled to occur until after 1982. (See Figure 5). It is possible that without these related changes having been accomplished there would not be the support mechanisms or resources needed to assure the achievement of Change No. 13. Therefore, steps should be taken to delay the achievement of Change No. 13 for at least one year, while attempting to accelerate or hasten the achievement of the related changes by at least two years.

Secondly, assuming the adjustments suggested above are accomplished, it may be beneficial to operate a pilot of the Equal Transfer System (Change No. 13) within a selected region of the state, before the full implementation of the change is attempted. Although preparations and negotiations might take place earlier, such a pilot project should not be attempted prior to 1982. This will give higher education officials

Fig. 5 -- Adjusting the Timing for Achieving Key and Related Changes in Higher Education



and the public an opportunity to examine carefully the effectiveness of the procedures to be used in the implementation phase. Involved in this pilot project would have to be institutions representative of the private, public and community college sectors of the higher education complex. Also, every effort should be made to complete the implementation of the related changes by the time the pilot project is terminated. Full implementation of the Equal Transfer System should be underway by 1983, certainly no later than 1984.

In terms of this current study, the exercise carried out on Change Statement No. 13 should be used on the remaining fourteen changes in higher education. When this is done the appropriate education officials and legislators within the State of Connecticut will be able to judge more accurately the impact and overall feasibility of the changes that have been recommended in the Master Plan for Higher Education. The use of the Delphi Technique in the manner demonstrated by this study is relatively inexpensive in time and money, given the amount of information generated by the survey. Also, the data itself can be fairly easily digested by the general public, whether it is presented in the form of discrete statements on the timing and impact of each change, or reported in narrative form as illustrated by the scenario above.

The scenario is but one of several methods within the repertoire of the futurist that can be employed to link together a series of individual forecasts. Another method is the Cross-Impact Matrix, where the various events or forecasts are listed in chronological order according to forecast date, and arrayed as both the rows and columns of the matrix. The

cells of the matrix represent the interactions between the events. (The reader should note that Figure 5 in the preceding section was developed on the assumption that the Related Changes would interact positively with the Key Change, provided the timings of both kinds of changes were adjusted.) Once the cross-impact matrix has been set up, the forecaster starts with the earliest event and determines the impact on all later events if the first event does or does not occur. The second and remaining events are treated similarly.

Once the matrix has been completed by the forecaster, what remains is a series of synthetic future histories which have been developed on the basis of the probably occurrence or nonoccurrence of individual events at a given time and their impact on other events specified within the matrix. The future histories, then, are the written descriptions of several sets of scenarios, each set representing a single play of the cross-impact matrix. By using the cross-impact matrix method on the higher education changes described in this study, state officials can check the consistency of the individual change statements and the predicted interactions between them. Also, this method can more easily identify the key changes among the fifteen identified, thus enabling the decision makers to determine which of the changes should be attended to first, second, and so on.

Considering the Future

It would be negligent on the part of this writer if nothing is said about the implications of this study for public secondary education, the "lower division" of the education complex as described in the Introduc-

tion. The Delphi Technique (with or without the Cross-Impact Matrix) can be of great assistance to public boards of education and school administrators and teachers when dealing with the many controversial issues surrounding the modern school system. The following are just a few examples of these issues:

1. declining enrollments, class sizes, building utilization, etc.
2. discipline, school violence and vandalism, values, etc.
3. back to basics, declining standardized scores, competency-based education, etc.
4. collective bargaining, competency-based staff evaluations, etc.
5. equal educational opportunity, desegregation/integration, bilingual/bicultural education, etc.
6. federal/state/local support for education, property versus income tax for education, etc.
7. alternative education programs, life long learning, community, schools, etc.

The issues outlined above are deliberately stated in an almost open-ended manner in order to avoid forcing the reader to focus too narrowly on them. If this list is reviewed for the purpose of identifying the major players in most of the events or activities surrounding these issues, one might be surprised to discover that, along with the educators and students, parents and citizens play a major role in determining the nature, intensity and outcome of these issues. Citizen involvement in educational decision making, even in the area of collective bargaining, is growing every year. However, this involvement is still not structured in a manner that promises to benefit the schools and the students.

For parents and citizens, this lack of structure results in misunderstandings and erroneous perceptions of their roles in the decision making process surrounding an educational issue. For school administrators and planners, this lack of structure forces them either to be non-responsive to the various groups clamoring for attention, or to make ill-informed, often arbitrary, decisions about what group's input is worthy of serious consideration.

If we examine the various modes of citizen involvement in education today, we discover that the vast majority of citizens who do become involved do so usually through their participation on school boards and advisory committees, parent-teacher groups, as volunteers in school programs, or as "activists" in ad hoc groups determined to rescue their schools from some iminent crisis. Citizens today are finding these modes of involvement to be less than satisfactory, in terms of their own personal needs and the impact their involvement seems to have on what happens in the schools.

What is needed in public education today is a communication process that overlays the current modes of citizen involvement, providing opportunities for both input from and feedback to the community during any stage of the decision making process. Through the combined use of a data collection techniques like the Delphi, the creative modification of existing school system practices, and the full exploitation of our communications technology, such a communication process can be developed and implemented with a very positive impact on the level and quality of citizen participation in education.

For example, as indirect consumers of educational services, parents find themselves focusing on school operations more closely during certain stages of their child's school career than at other times. One of these stages is the year before the child is enrolled in school. With parental interest so high, it might be an opportune time to encourage their involvement in important educational issues, such as declining enrollments and their impact on school services. The following four-phased strategy is designed to capitalize on parental interest, solicit their opinions, provide feedback information, and generally open the channels of communication between the parents and the schools.

The first phase of this communication process could be developed around the traditional student enumeration activity conducted by every school system each Spring. Normally, the enumerators simply go from door to door obtaining information about the number of the school-age and preschool children living in the households. Without much more added expense or time, the enumerators could be trained to ask additional questions like the following:

1. "This year the school system's enrollment is down by 175 students over last year. Do you think this trend will continue next year?" (Yes or No)

2. "Assuming enrollments do continue to decline, should this trend be reflected in a lower school budget request for the next school year?" (Yes or No)

3. "If the next school budget has to be cut, where should the decreases come first?"
   (teaching staff; administrative staff; materials and supplies; special programs; extra curricular activities; curriculum development; inservice training; maintenance; or transportation)

The second phase could begin in a relatively short period of time (no more than four weeks), and could be developed around the traditional preschool screening activities for the children to be enrolled in Kindergarten the following Fall. While the parent's child is being screened or evaluated, school staff could share in written form the results of the first phase survey conducted by the school enumerators. These results would contain the individual parent's own responses to the three questions. The parent, then, could be asked to answer the same questions again in light of the previous survey results. Also, the parent could make any written comments he or she desired. The data from this phase could be tabulated and the comments analyzed for an early Fall publication.

Phase three could be implemented in conjunction with the opening of school in the Fall. The results of the second phase survey could be published in the September issues of each school's newspaper, or Principal's Letter, or distributed at the first school PTA meeting. Then, high school students could be trained (perhaps, as part of a business and marketing course) to telephone a random number of citizens in the community for the purpose of obtaining the following information:

1. "Citizens of our community have indicated in previous surveys that, if the school budget was cut, the first three priority areas for cutting should be administrative staff, inservice training, and extra curricular activities. Could you identify the specific positions, inservice training programs and extra curricular activities the Board should eliminate, if it had to?"

2. "If the Board of Education follows your advice, are there ways to maintain these programs and services without Board funding?"

3. "If you were asked, would you be willing to serve on a Board Budget Advisory Committee this year?"

The first step in phase four could be the formation of the Board Budget Advisory Committee. Invitations could be issued to a cross-section of the citizens who indicated a willingness to serve during the telephone survey in phase three. Other members of the community could also be asked to join. This group should be of moderate size, and should meet no more than six times during the school budget approval process of the Board of Education. The charges to the committee could include the following:

1. Evaluate the process and product of the surveys conducted in phases one, two, and three.

2. Estimate the impact of the suggested priorities for budgetary decreases on the quality and quantity of educational services in the school system.

3. Study the feasibility of maintaining without Board funding the programs and services the community has recommended for elimination from the budget.

4. Advise the Board of Education, school administration, and the community of the committee's findings and determinations regarding the first three charges.

To the reader this four-phased strategy may not appear to be related to the Delphi Technique. However, closer examination will reveal that it incorporates all of the essential elements of this process; consensus building, controlled feedback, communication of information, future-focused (although, relatively short-termed), statistical response, and anonymity (phases 1-3). The added expense to the school system would be minimal, especially in light of the amount of information received. Parents and community could develop more confidence in

school board members and school administrators after having been involved in, or informed about, this process. Although not everyone in the community could take part in the entire process, it is clear that the approach used in phase one gives each person an equal chance to participate in all four phases, including the deliberations of the Board Budget Advisory Committee.

The plan described above is an example of how school administrators and planners can employ a proactive, rather than a reactive approach to citizen participation. The state of affairs in public education today may well be improved once the time is taken to systematically solicit opinions on key issues from all segments of the community. Properly designed and implemented, the Delphi Technique can be used to do just that. There may even be some value in providing interested citizens this supplementary forum in which to voice their concerns. With the data and other information provided by this approach, school officials may be better able to judge what alternative educational future is desired or expected by the community. Knowing this, even though some uncertainty might exist, educational administrators and planners can carry out management activities and functions now which can have a positive impact on what happens to education and our society in the future.

APPENDIX A

DELPHI CHANGE STATEMENTS: ROUNDS I, II, & III

DELPHI CHANGE STATEMENTS: ROUNDS I, II, & III

1. Nearly one-third of all instruction will be delivered through television, newspaper, computer and other technologically related media.

2. Five related data bases focusing on students, staff, facilities, and finance will be interlinked and operative as a statewide management/communications Information System.

3. Normal institutional accreditation procedures will be augmented by the establishment and use of criteria for ongoing performance evaluations of all institutional programs.

4. The total number of degree programs in undergraduate and graduate professional training at the four State Colleges will increase 10-30%.

5. Supportive programs (such as counseling services, day-care centers, and scholarship programs) will be key factors in per-student-cost calculations.

6. Planning and coordination of the functions and missions of higher education institutions will be carried out with a major emphasis on regional cooperation.

7. State funding of higher education will achieve a "per full-time-equivalent" student support level equal to the 75th percentile among the fifty states.

8. Over 40% of all programs offered by proprietary and other non-degree granting institutions will be eligible for "college credit".

9. Almost 5% of all degrees granted annually in the state will be awarded by the Board for State Academic Awards.

10. The distinction between Adult Education and Continuing Education in terms of clientele and programs will be virtually nonexistent.

11. The effective implementation of "affirmative action" aimed at increasing and maintaining diversity in admissions, employment, and program content areas will be standard operating procedure in all public colleges.

12. The rate of growth for part-time undergraduate enrollments (including all age categories) will exceed that of full-time undergraduates.

13. An equitable transfer system, operating between all public and cooperating private institutions will be in common use by large numbers of students (50% or more) on the community college level.

14. The state higher education system (public and private) will be able programmatically to accommodate over 75% of the college-age (18-21 year olds) population.

15. Work experience related to program content will receive academic credit in all public and most private schools and colleges.

APPENDIX B

SEQUENCE OF EVENTS

SEQUENCE OF EVENTS

Beginning Date: March 4, 1974 Completion Date: July 29, 1974

No.	Activity	Time ( )= target dates
1.0	Orientation for CHE officials regarding the nature and potential of proposed study.	
1.1	Identify and obtain financial and/or "in-kind" resources for the study.	March 4-March 18, 1974
1.2	Develop and produce introduction/ invitation materials.	(3/18)
2.0	Obtain commitment and personal data from those members of Resource Groups, Review/Evaluation Group, and Constituent Boards willing to participate in the study.	March 19-March 29, 1974
2.1	Develop and produce Round I materials.	(3/22)
2.2	Begin data compilation on population characteristics.	
2.3	Submit progress report to CHE.	(3/29)
3.0	Request responses for Round I: termination date - April 15th	
3.1	Develop and produce Round II materials, exclusive or Round I summary	(4/8)
		April 1-April 30, 1974
3.2	Complete compilation of population data.	
3.3	Analyze and summarize Round I data.	(4/22)
3.4	Submit progress report to CHE.	(4/30)

SEQUENCE OF EVENTS (CONTINUATION)

Beginning Date: March 4, 1974 Completion Date: July 29, 1974

No.	Activity	Time ( )= target dates
4.0	Request responses for Round II termination date - May 15th. Submit Round I summary	
4.1	Develop and produce Round III materials, exclusive of Round II summary	(5/8) May 1-May 31, 1974
4.2	Analyze and summarize Round II data.	(5/22)
4.3	Complete comparative analysis of data from Rounds I and II.	
4.4	Submit progress report to CHE.	(5/31)
5.0	Request responses for Round III: termination date - June 17th. Submit Round II summary.	
5.1	Produce brief report for participants, excluding Round III summary; Thank-you letter, etc.	June 1 - June 28, 1974
5.2	Analyze and summarize Round III data.	(6/24)
5.3	Submit brief report to participants, including Round II summary.	(6/28)
6.0	Complete overall general and statistical analysis of data.	July 3 - July 29, 1974
6.1	Complete written draft of report on findings and conclusions.	(7/19)

Note: This sequence of events was only an estimation of the time needed to complete this study. Actual occurrence of events were determined by the speed in which responses were returned, and the time required for data compilation.

APPENDIX C

LETTERS OF INTRODUCTION

STATE OF CONNECTICUT
COMMISSION FOR HIGHER EDUCATION
P.O. BOX 1320 · HARTFORD, CONNECTICUT 06101
AREA CODE 203 566-3911

March 15, 1974

Mr. Ben Dixon
297 Preston Street
Windsor, Connecticut 06095

Dear Ben:

This is to follow up the conversations which you have had with Lou Rabineau, the vice-chancellor in this office, and with me concerning the research study connected with your doctoral dissertation at the University of Massachusetts.

On the basis of the review we have made of the materials which you presented to date, as well as the several conversations which you have had with Lou and with me, we are very much interested in the study which you are undertaking and excited about its possibilities, especially with regard to the activities of the Commission for Higher Education. The dimensions which your study would add to the activities thus far in the first Master Plan for Higher Education in the State of Connecticut are, we believe, very significant to the planning, evaluative, and prognosticating aspects of our planning activities for higher education in the state.

We would very much welcome the opportunity of having you work closely with us as you pursue your research. We hope and anticipate that the work which you are doing would be of significant benefit, certainly to the Commission, and we would hope mutually valuable to the Commission and to the furtherance of your research activity in your doctoral dissertation.

We will look forward to the continued activity in bringing the study to fruition. As indicated in our conversations, we would be most happy to cooperate with you to the fullest extent possible in offering such clerical and related assistance as would be necessary and appropriate.

Sincerely yours,

Warren G. Hill
Chancellor

WGH:LR:df

April 25, 1974

TO: Members of CHE, Board of Trustees of Public Institutions of Higher Education, Management/Policy Group, Resource Groups, Review and Evaluation Group

FROM: Warren G. Hill, Chancellor

Once again the Commission for Higher Education would like to thank you for your interest and involvement in the development of the Master Plan for Higher Education. The many positive reactions of people both within and outside the state, regarding the process and outcomes of the master planning efforts, have been very encouraging.

Recently, Mr. Ben Dixon, a doctoral candidate at the University of Massachusetts, indicated interest in conducting a survey of opinions from those persons having some knowledge of and involvement in the Master Plan's development. On the basis of Mr. Dixon's proposal and several conversations between him and members of the Commission staff, we are interested in the study and its possibilities, especially with regard to further planning activities.

Because of the potential value of the study we invite your cooperation and participation in the study.

WGH:jc

P.S.

You will note that Mr. Dixon has indicated that the identity of respondents to questions will be held in strict confidence.

April 29, 1974

Dear

As a doctoral student at the University of Massachusetts and a resident of this state, I am conducting an investigation of the future state of higher education in Connecticut. In order to complete this study I am enlisting the aid of fellow residents within the state who are knowledgeable about education in general and higher education in particular.

Specifically, this study will focus on the timing and potential impact on the people in Connecticut of 15 changes or innovations in higher education. These potential changes primarily center around the areas of management, operations, and services for postsecondary students. The study will utilize a flexible projection technique called the "Delphi" method, which involves pooling the opinions of a pre-selected panel of individuals who have, in this case, an interest and expertise in higher education. In a series of three rounds the Delphi probe solicits and summarizes the responses of the panelists regarding their estimations of the probability and timing of the occurrence of some future event.

It would be extremely helpful if we could include your opinions with the other data collected in this study. Thus, I am inviting you to join the Delphi Panel on Higher Education. By design this panel will never meet, and no individual participant will know who his fellow panelists are. All questions and responses will be transmitted through the mails and periodically each participant will receive summaries of the collective opinions of the panel. For purposes of consistency it is extremely important that you participate in all three rounds of the Delphi probe.

The actual amount of time you will need to devote to each round of the survey will be approximately fifteen minutes. During this time you will be asked to respond to 1 or 2 questions for each of the 15 Delphi Change Statements. Upon completing this task all you have to do is mail your Response Sheets to the address below and wait for the results of the panel.

If you are willing to be involved in this study, please fill out the enclosed information sheet and mail by May 13, 1974 to the address below. Among other things this information will help us determine the degree of diversity among the panelists in this study. Your participation will assure us that the range of opinion we have projected will be realized. Of course, all individual responses and comments will be kept confidential. Thank you in advance for your consideration and cooperation.

Sincerely yours,

Ben Dixon

Send all correspondence to:

Ben Dixon
D.P.H.E.
297 Preston Street
Windsor, Connecticut 06095

BD:jc

APPENDIX D

PARTICIPANT INFORMATION FORM

LPHI PANEL ON HIGHER EDUCATION

PARTICIPANT INFORMATION

me _____ Position _____

stitution/Organization _____

dress _____ Phone _____

ty _____ State _____ Zip Code _____

order to verify that we have solicited responses from a relatively diverse group of dividuals, we would like your answers to the following questions. This will be helpful, r example, in constructing an overall profile of the participants on the panel.

Briefly explain your relationship or association, whether direct or indirect, with any aspect of higher education in Connecticut.

_____

_____

_____

Occupation Area: (check one) ___ Business/Industry ___ Public Education

___ Private Education ___ Non-Profit Agency

___ Other

To what degree are you familiar with the Master Plan for Higher Education in Connecticut? (check one)

___ No Familiarity ___ Moderate Familiarity

___ Some Familiarity ___ Great Familiarity

Have you ever been a panelist for a Delphi Survey before? ___ Yes, ___ No. If so, what was the subject matter of the statements and questions?

_____

_____

(Do not write below this line)

rticipant Code Number _____

unds Completed: I _____ II _____ III _____

APPENDIX E

PARTICIPANT INSTRUCTION LETTERS AND RESPONSE FORMS:

ROUNDS I, II AND III

DELPHI SURVEY: ROUND I

Participant Code Number _____ Date _____

Dear Participant:

Thank you for allowing us to include your opinions as part of the data collected in this round of the survey.

Please find enclosed:

_____ 1. Delphi Change Statements for Rounds I, II & III

_____ 2. Round I: Response Sheet

Other _____

General Instructions:

In this round you are asked to respond to the two questions below on each of the 15 change statements.

1. Assuming these changes will occur, what will be their impact? (By "impact" is meant the overall potential effect of the change on the people in the state).

2. When will these changes occur? By _____ (Given the incremental manner in which most change occurs, by what point in time will it be relatively clear that these changes have in fact occured)?

Procedure:

1. Read the Delphi Change Statement on the first sheet;

2. Read the question on Response Sheet A;

3. Indicate your response to the question for each change statement by circling the number or word that best expresses your opinion;

4. Use the same procedure for the question on Response Sheet B (reverse side of A);

Example

Change statement no. 20	"Approximately 30% of the two-year proprietary schools seeking state accreditation will be incorporated into the state community college system."							
		None						Very Great
(Impact question)	(20)	1	2	3	4	5	6	7
(Timing question)	(20)	1975	1980	1985	1990	1995+	Never	

---

5. We would appreciate your returning the completed Response Sheet by _____.

THANK YOU

DELPHI SURVEY: ROUNDS I & II

RESPONSE SHEET A

Assuming these changes will occur, what will be their impact?

This question pertains to each of the fifteen Change Statements listed on the sheet provided. Please read carefully the corresponding statement before answering each time. (Circle only one item each time.)

(Change Statement Number)	(Response Scale) None						Very Great
(1)	1	2	3	4	5	6	7
(2)	1	2	3	4	5	6	7
(3)	1	2	3	4	5	6	7
(4)	1	2	3	4	5	6	7
(5)	1	2	3	4	5	6	7
(6)	1	2	3	4	5	6	7
(7)	1	2	3	4	5	6	7
(8)	1	2	3	4	5	6	7
(9)	1	2	3	4	5	6	7
(10)	1	2	3	4	5	6	7
(11)	1	2	3	4	5	6	7
(12)	1	2	3	4	5	6	7
(13)	1	2	3	4	5	6	7
(14)	1	2	3	4	5	6	7
(15)	1	2	3	4	5	6	7

Coding Use Only	
1-3	
4	1
5-6	X
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	

DELPHI SURVEY: ROUNDS I & II

RESPONSE SHEET B

When will these changes occur? By_____

This question pertains to each of the fifteen Change Statements listed on the sheet provided. Please read carefully the corresponding statement before answering each time. (Circle only one item each time.)

(Change Statement Number)	(Response Scale)						Coding Use Only
							22-23 X
(1)	1975	1980	1985	1990	1995+	Never	24_____
(2)	1975	1980	1985	1990	1995+	Never	25_____
(3)	1975	1980	1985	1990	1995+	Never	26_____
(4)	1975	1980	1985	1990	1995+	Never	27_____
(5)	1975	1980	1985	1990	1995+	Never	28_____
(6)	1975	1980	1985	1990	1995+	Never	29_____
(7)	1975	1980	1985	1990	1995+	Never	30_____
(8)	1975	1980	1985	1990	1995+	Never	31_____
(9)	1975	1980	1985	1990	1995+	Never	32_____
(10)	1975	1980	1985	1990	1995+	Never	33_____
(11)	1975	1980	1985	1990	1995+	Never	34_____
(12)	1975	1980	1985	1990	1995+	Never	35_____
(13)	1975	1980	1985	1990	1995+	Never	36_____
(14)	1975	1980	1985	1990	1995+	Never	37_____
(15)	1975	1980	1985	1990	1995+	Never	38_____

Participant Code Number_____ Date_____

LPHI SURVEY: ROUND II

rticipant Code Number _____ Date _____

r Participant:

ank you for allowing us to include your opinions as part of the data collected in this und of the survey.

ease find enclosed:

_____ 1. Delphi Change Statements for Rounds I, II & III

_____ 2. Round I: Summary of Responses (A & B)

_____ 3. Round II: Response Sheet

neral Instructions:

this round you are asked to respond again to the same questions as Round I. However, is time you may take note of the Summary of Responses sheet which contains the collective inion of all participants who responded to these questions in the previous round. This eet also shows your individual responses for Round I.

ocedure:

1. Read the Delphi Change Statement on the first sheet;
2. Read the question on Response Sheet A;
3. Indicate your response to the question for each change statement by circling the number or word that best expresses your opinion;
4. Check to see if your new response falls in the ////// area of responses for Round I (see Summary Sheet). If so, you may indicate in a sentence ro two the reason(s) underlying your opinion. Be sure to indicate which question (A or B) and which Change Statement (1 to 15) you are referring to. Do this on the back of your Delphi Change Statement sheet and return it along with your Response Sheet to the address below.
5. Use the same procedure for the question on Response Sheet B (reverse side of A);
6. We would appreciate your returing the completed Response Sheet and any other comments by _____.

ETURN TO:

MR. BEN DIXON
D. P. H. E.
297 Preston Street
Windsor, CT. 06095

THANK YOU

(PLEASE INDICATE SUMMER ADDRESS IF DIFFERENT FOR THE MONTH OF JULY)

DELPHI SURVEY: ROUND III

APPENDIX E-5

Participant Code Number _____ Date _____

Dear Participant:

Thank you for allowing us to include your opinions as part of the data collected in this round of the survey.

Please find enclosed:

_____1. Delphi Change Statements for Rounds I, II & III

_____2. Round II: Summary of Responses

_____3. Round III: Response Sheet

General Instructions:

In this round you are asked to respond to a new question for the fifteen Change Statements;

Which one of the following will most promote and which one will most hinder each of these changes?

1. Federal Government
2. State Government
3. Industry (business)
4. Students*
5. Faculty*
6. Public Education*
7. Private Education*

*Limited to higher education in Connecticut

Procedure:

1. Read the Delphi Change Statements on the first sheet;
2. Read the question on the Response Sheet;
3. Indicate your response by writing the letters "P" (for Promote) and "H" (for Hinder) in the blanks under that group or institution which, in your opinion, will tend most to promote or hinder each of these changes. Remember each Delphi Change Statement receives only two responses, "P" and "H", in two different categories of your choice. The following is an example:

(Change Statement no. 20) "Approximately 30% of the two-year proprietary schools seeking state accreditation will be incorporated into the state community college system."

	Fed. Govt.	State Govt.	Industry	Students	Faculty	Public Educ.	Private Educ.	Other? (mark P or H)
(20)	____	P	____	____	____	H	____	____

4. We would appreciate your returning the completed Response Sheet by

August 2, 1974 to: Mr. Ben Dixon
297 Preston St.
Windsor, Connecticut 06095

THANK YOU

Which one of the following will most promote and which one will most hinder each of these changes?

Note: Write "P" (for Promote) and "H" (for Hinder) in the appropriate categories for each change statement.

(Change Statement Number)	(Response Categories)							
	1 Fed. Govt.	2 State Govt.	3 Industry	4 Students	5 Faculty	6 Public Educ.	7 Priv. Educ.	8 Other? (mark P or H)
(1)								
(2)								
(3)								
(4)								
(5)								
(6)								
(7)								
(8)								
(9)								
(10)								
(11)								
(12)								
(13)								
(14)								
(15)								

Participant Code Number Date

APPENDIX F

SUMMARY OF RESPONSES (EXAMPLE): ROUNDS I AND II

DELPHI PANEL ON HIGHER EDUCATION - ROUND I - SUMMARY OF RESPONSES

/////// = Total range - lowest to highest responses

..... = Interquartile range - inner 50 percent of responses

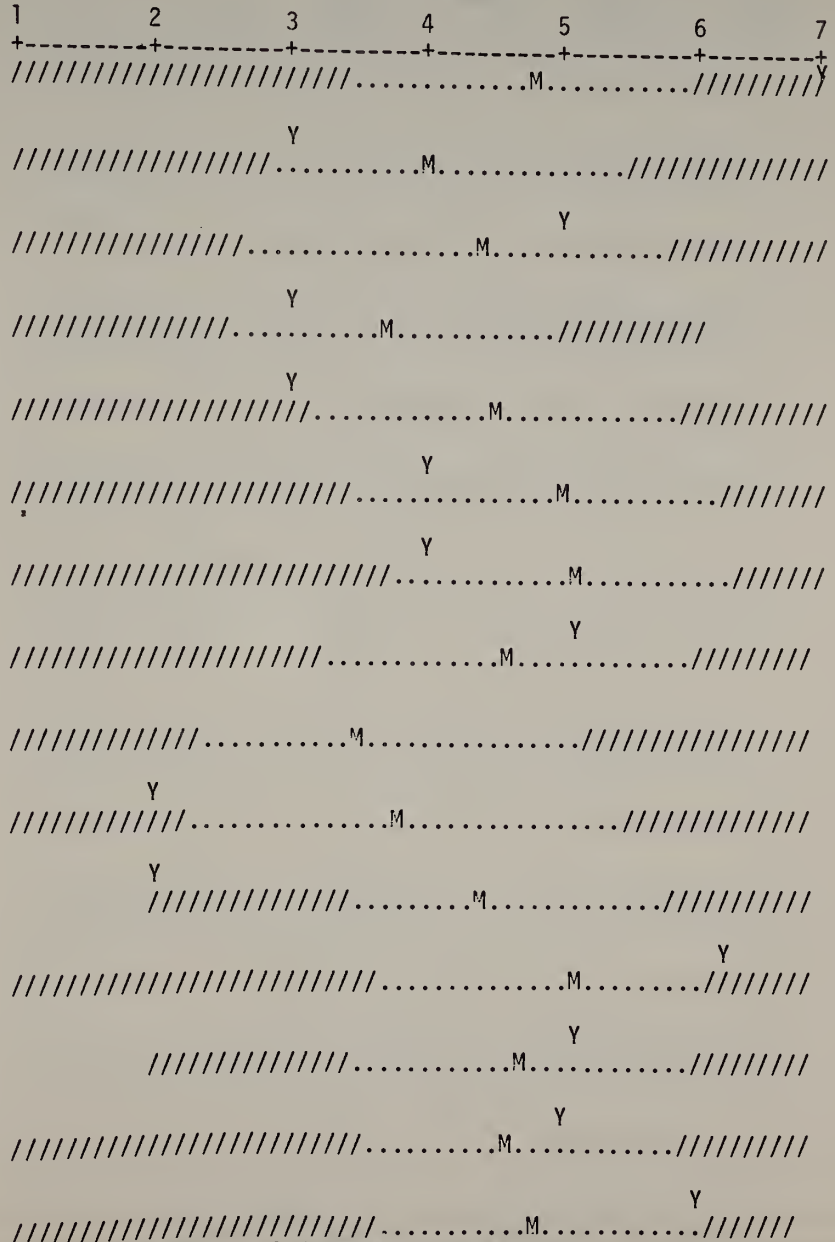
M = Median - point below which 50 percent of responses fell

Y = Your individual response

(A) Assuming these changes will occur, what will be their impact

(C.S.N.)

(RESPONSES)



DELPHI PANEL ON HIGHER EDUCATION - ROUND I - SUMMARY OF RESPONSES

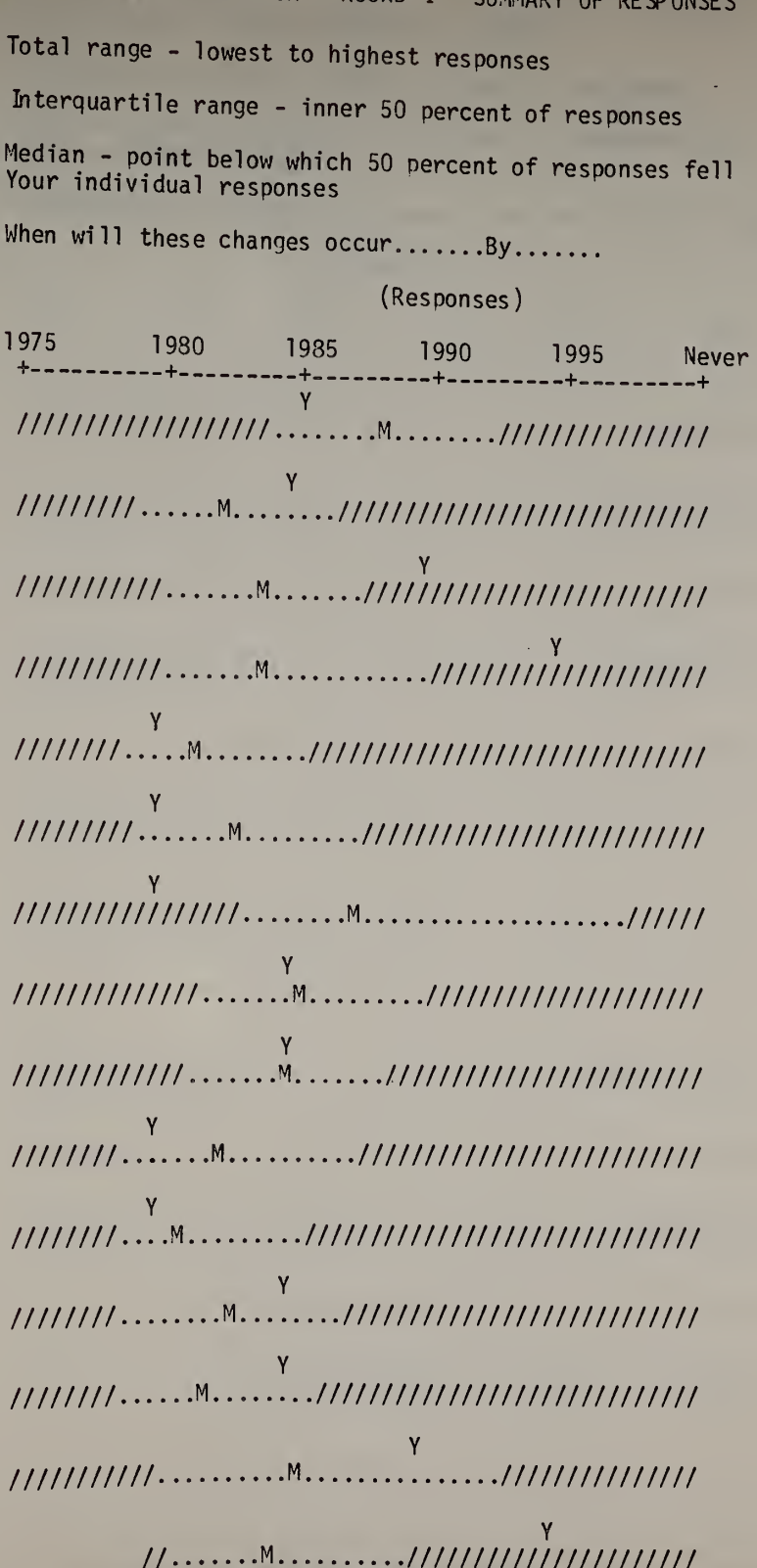
/////// = Total range - lowest to highest responses

..... = Interquartile range - inner 50 percent of responses

M = Median - point below which 50 percent of responses fell
Y = Your individual responses

(B) When will these changes occur.....By.....

(C.S.N.) (Responses)



DELPHI PANEL ON HIGHER EDUCATION - ROUND II - SUMMARY OF RESPONSES

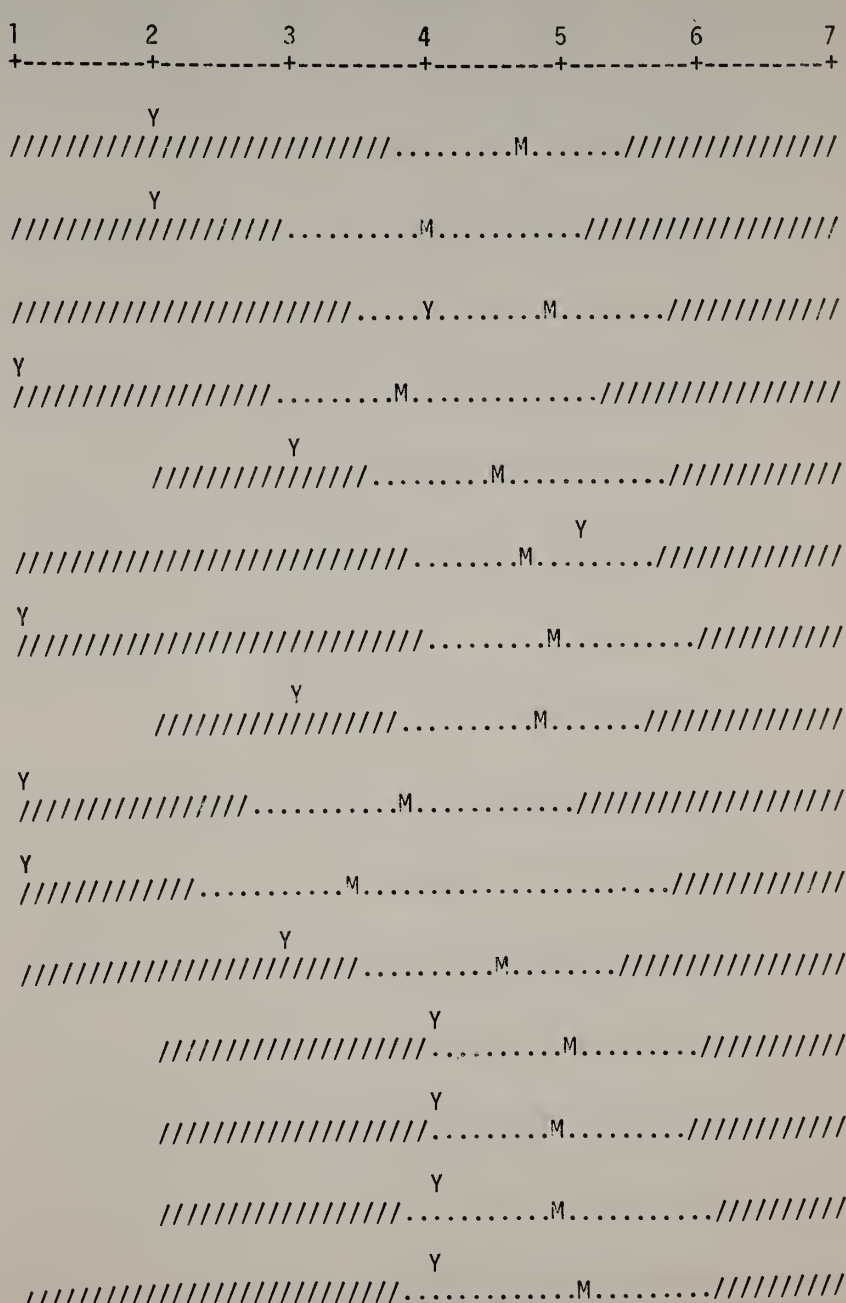
/////// = Total range - lowest to highest responses

..... = Interquartile range - inner 50 percent of responses

M = Median - point below which 50 percent of responses fell
Y = Your individual response

(A) Assuming these changes will occur, what will be their impact

(C.S.N.) (Responses)



DELPHI PANEL ON HIGHER EDUCATION - ROUND II - SUMMARY OF RESPONSES

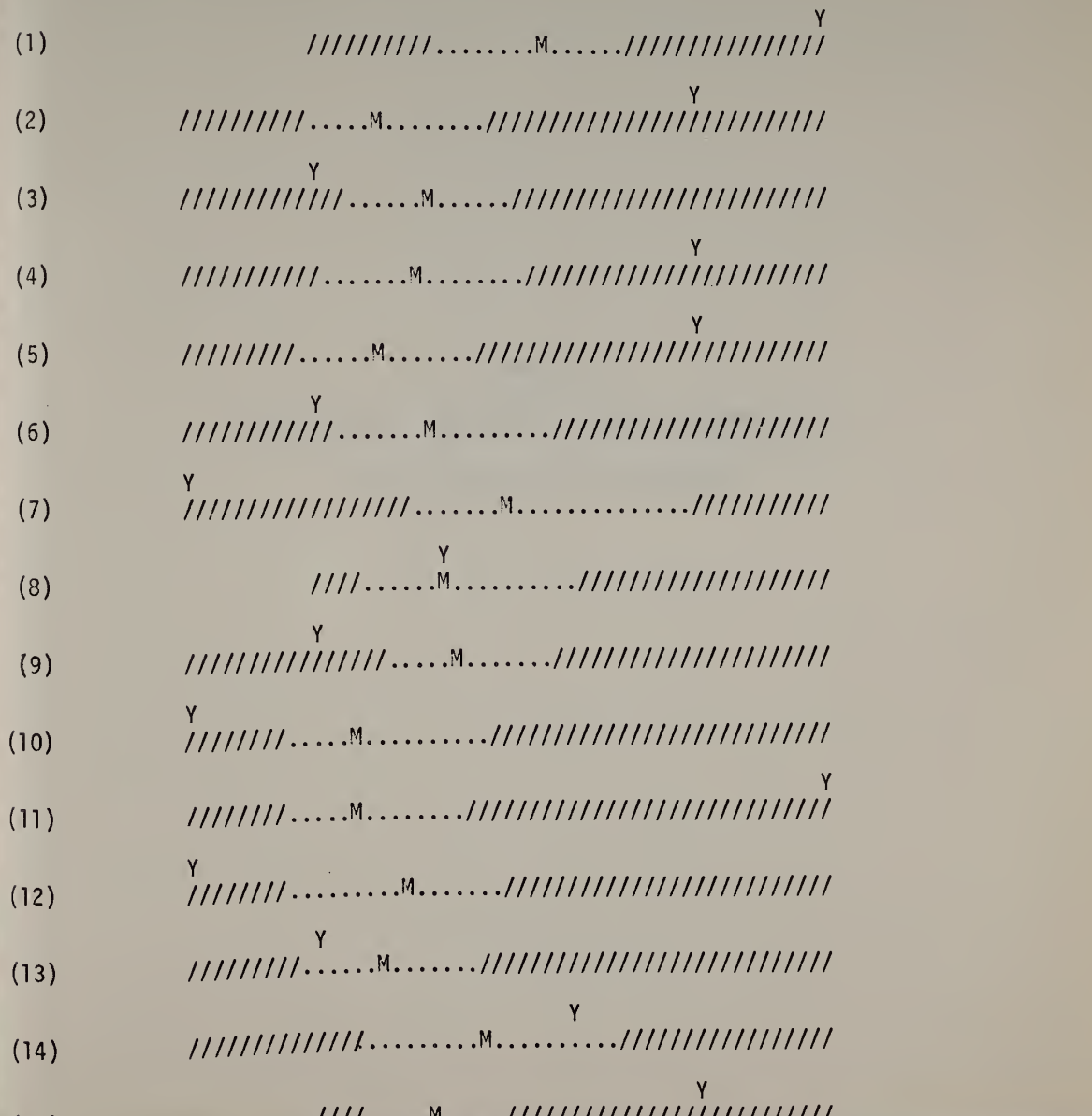
/////// = Total Range - lowest to highest responses

..... = Interquartile Range - inner 50 percent of responses

M = Median - point below which 50 percent of responses fell
Y = Your individual response

(B) When will these changes occur.....by.....

(C.S.N.) (Responses)



APPENDIX G

PARTICIPANT'S COMMENTS ON CHANGE STATEMENTS 1-15

FOR TIMING AND IMPACT QUESTIONS

TIMING QUESTION

CHANGE STATEMENT 1

Nearly one-third of all instruction will be delivered through television, newspaper, computer and other technologically related media.

Code No.	Response	Comment
022	1980	If instruction does not make use of technological media soon (1980), it will be behind the times in teaching methodology.
033	Never	The machinery works too poorly -- and people want contact with people.
053	Never	The teacher is here to stay. Media may become an important tool to be used by the teacher, but I feel one-third is an unrealistic judgement as to its degree of substitution in the classroom.
059	1995+	I am pessimistic about the readiness of both educators and consumers of education to adopt less personal methods of communication, about the readiness of those controlling the hardware (TV, radio, newspapers) to use it for unprofitable (financially) purposes, and about the quality of software. At least a generation is needed.
080	1995+	Hard to accept. Probably missed on 1A.

TIMING QUESTION

CHANGE STATEMENT 2

Five related data bases focusing on students, staff, facilities, and finance will be interlinked and operative as a statewide management/ communications information system.

Code No.	Response	Comment
023	1990	The right to privacy and need to express differences through competition makes this a near "never".
033	Never	The state won't provide the money to accomplish it.

TIMING QUESTION — CHANGE STATEMENT 3

Normal institutional accreditation procedures will be augmented by the establishment and use of criteria for on-going performance evaluations of all institutional programs.

Code No.	Response	Comment
048	Never	Never in a meaningful way.
053	1975	This is in the Master Plan and will be implemented immediately.
101	1995+	Very high inertia on this because it is too threatening and foreign to all power holders and vested interests in higher education.
106	1995+	Sure they'll have on-going evaluation, but if it's like it is in many school systems now, it's not very valuable....

TIMING QUESTION — CHANGE STATEMENT 4

The total number of degree programs in undergraduate and gradute professional training at the four State Colleges will increase 10-30%.

Code No.	Response	Comment
007	Never	I think the trend will be to reduce the proliferation of degree programs.
010	Never	The tendency of the academic degree to slide downward in prestige and meaning will be reversed by both the demands of society and the deliberate action of the educational system. Open admissions, college-level courses in dishwashing, sending 75% of young people to institutions established for an intellectual elite, will be eliminated. But there will be a rising tendency to give credit for work experience, making it possible for a person who never earned a bachelor's degree to qualify himself for positions for which an advanced degree is a prerequisite.

TIMING QUESTION (CONTINUATION) CHANGE STATEMENT 4

Code No.	Response	Comment
015	Never	With present expanded facilities and faculty and with projected surplus of teachers the State Colleges will require many years to obtain a balanced efficient operation.
087	Never	I expect new degree programs to displace old ones.
096	1995+	Not in Stats for birth rates.

TIMING QUESTION CHANGE STATEMENT 5

Supportive programs (such as counseling services, day-care centers and scholarship programs) will be key factors in per-pupil-cost calculations.

Code No.	Response	Comment
032	1975	The Master Plan indicates a 1975 year start for the Child Care Center and 1976 as a start for the counseling service.
033	1975	They are now when we make a budget.
080	1990	It will be tough to finance these programs, as regretable as this is.

TIMING QUESTION CHANGE STATEMENT 6

Planning and coordination of the functions and missions of higher education institutions will be carried out with a major emphasis on regional cooperation.

Code No.	Response	Comment
003	1990	I am pessimistic about regional cooperation in Conn. especially in the Southwestern portion of the State.
009	1990	If it happens at all, it will be slowed by political leverage of constituent boards.

TIMING QUESTION (CONTINUATION) CHANGE STATEMENT 6

Code No.	Response	Comment
023	1995+	One should never say "never". The impossible may happen.
033	Never	Colleges won't cooperate unless forced to -- nobody in Connecticut will force them.
048	1990	The private sector will resist.
053	1975	This is being implemented now.
106	1990	Maybe I'd better change, because money may force cooperation that lip service hasn't produced.

TIMING QUESTION CHANGE STATEMENT 7

State funding of higher education will achieve a "per full-time-equivalent" student support level equal to the 75th percentile among the fifty states.

Code No.	Response	Comment
007	1980	I think the Democrats will control the State House after the next election and increase support.
032	Never	I just can't see the state redirecting these proportions to reach this goal.
033	Never	The State is too cheap.
048	Never	Connecticut will stay behind.
087	Never	We're already 8th in the nation ($1508/student according to CPEC figures). Does anyone feel that we will go backwards (from 85% to 75%)?

TIMING QUESTION CHANGE STATEMENT 8

Over 40% of all programs offered by proprietary and other non-degree granting institutions will be eligible for "college credit".

TIMING QUESTION (CONTINUATION) CHANGE STATEMENT 8

Code No.	Response	COMMENT
033	1980	State accrediting agency has already completed guidelines for this purpose. Federal funding encourages it.
053	Never	This is unrealistic. Institutions must retain autonomy in determining their own credit criteria.
059	Never	Maybe I'm a wishful thinker here -- so much is pot-boiling, low caliber, that college credit should not be granted.
101	Never	Don't believe snobbish faculties will ever let it happen.

TIMING QUESTION CHANGE STATEMENT 9

Almost 5% of all degrees granted annually in the state will be awarded by the Board for State Academic Awards.

Code No.	Response	Comment
009	1980	If the "idea" "goes" at all, this is a modest six-year goal.
053	Never	Experience in other states indicates to the contrary.

TIMING QUESTION CHANGE STATEMENT 10

The Distinction between Adult Education and Continuing Education in terms of clientele and programs will be virtually nonexistent.

Code No.	Response	Comment
094	1990	Continuing Ed. more academic and Adult Ed. more happy oriented -- so will take longer.

TIMING QUESTION (CONTINUATION) CHANGE STATEMENT 10

Code No.	Response	Comment
003	1990	Competition between present Adult Ed. and College Continuing Ed. programs may make it difficult to merge these.
048	Never	"Adult Ed." will come to mean basic education (elementary, secondary) for older people. "Continuing Ed." will mean skill-renewal, skill-expansion, broadening of purview, extension of cultural horizons, deepening of understanding for people who already have basic mastery of standard skills and comprehensions.

TIMING QUESTION CHANGE STATEMENT 11

The effective implementation of "affirmative action" aimed at increasing and maintaining diversity in admissions, employment, and program content areas will be standard operating procedure in all public colleges.

(NO COMMENTS)

TIMING QUESTION CHANGE STATEMENT 12

The rate of growth for part-time undergraduate enrollments (including all age categories) will exceed that of full-time undergraduates.

Code No.	Response	Comment
059	1975	My crystal ball is either clearer or foggier than that of other respondents.
061	Never	It could happen by degree, in public colleges. It probably will happen in a few programs of special content (political science for example) in some private colleges, but several private colleges will not be involved. This practice tends to lead eventually to granting "college equivalence degrees" just as high school diplomas are now handed out. If education means only that an individual has a certain amount

TIMING QUESTION (CONTINUATION) CHANGE STATEMENT 12

Code No.	Response	Comment
(Continuation)		of factual knowledge and a grasp of certain concepts as contemporarily interpreted, then we should close colleges and continue by correspondence.

TIMING QUESTION CHANGE STATEMENT 13

An adequate transfer system, operating between all public and cooperating private institutions will be in common use by large numbers of students (50% or more) on the community college level.

Code No.	Response	Comment
053	Never	The Regional Community College mission is primarily to provide a wide range of options for students. Transfer to a 4-year degree program is not the goal of over 50% of their students, and never will or should be. If this happens, the community college system has failed.

TIMING QUESTION CHANGE STATEMENT 14

The state higher education system (public and private) will be able programmatically to accommodate over 75% of the college-age (18-21 year olds) population.

Code No.	Response	Comment
009	1995+	Taxpayer resistance/private college costs will slow up programmatic growth. Marginal curricular offerings will disappear (e.g. foreign language).
048	1995+	I just don't think the pressure for program expansion will be that intense, given the decline in the growth of the population.

TIMING QUESTION

CHANGE STATEMENT 15

Work experience related to program content will receive academic credit in all public and most private schools and colleges.

Code No.	Response	Comment
033	1995+	Some conservative schools will hold out for a long time.
096	1995+	Not in the minds of faculties -- depends on who wins the battle (administrators to gain enrollment, or faculty to retain quality).

IMPACT QUESTION

CHANGE STATEMENT 1

Nearly one-third of all instruction will be delivered through television, newspaper, computer and other technologically related media.

Code No.	Response	Comment
106	6	If T.V. etc. could be used really effectively (which it doubtless won't be), it could have a great effect on costs for personnel and buildings - many of my recent courses (I have completed 48 grad. hours in education) could have been as well or better taught, and surely more interestingly by a real pro on T.V.
101	3	I just don't see a terribly high impact on the kind of education being given. Obviously there would be high impact on educators.
096	7	Economic impact greatest.
078	7	If this statement is assumed, then the impact would have to be estimated as enormous.
061	7	Two results: Increased alienation of students from students and student from teacher; enhancement of concepts of reality as technological methods with further dehumanization of man. Leaders are caught up in the myth of progress through technology and systems control.
059	6	There is a lot of potential presently unused, in technological means to 1) help the teacher reach numbers of people, 2) help with educational routine. Use of it will greatly alter the concept of school (college) as a building, with prof. in front of class.
033	6	Will require substantially different faculty--- many people displaced.
023	7	Immediate feedback is the secret. Currently we repeat mistakes as well as new behavior patterns, then must unlearn them.

IMPACT QUESTION (CONTINUATION) CHANGE STATEMENT 1

Code No.	Response	Comment
010	7	It would be difficult to overestimate the changes in all aspects of education that will be wrought eventually by television. Education will be much less expensive (though perhaps less effective). The number of classrooms and instructors will be reduced, as will all the ancillary requirements of classroom instruction, from transportation to janitorial services, with concommitant reductions in cost.

IMPACT QUESTION CHANGE STATEMENT 2

Five related data bases focusing on students, staff, facilities, and finance will be interlinked and operative as a statewide management/communications Information System.

Code No.	Response	Comment
022	6	The impact of facilities and finances will be very strong influences.
023	2	If anything, I think less impact will result, than I originally estimated. People react to what's available without thinking.
032	7	This will result in cooperative effort and an elimination of duplication of programs also better understanding through better communications.
053	2	Impact will be great only in cost factor (eventual, not immediate) and release of personnel. Education itself will not be greatly affected.
101	2	This is just housekeeping detail.

IMPACT QUESTION

CHANGE STATEMENT 3

Normal institutional accreditation procedures will be augmented by the establishment and use of criteria for ongoing performance evaluations of all institutional programs.

Code No.	Response	Comment
031	6	Effect would be great and I think adverse to innovative education.
033	6	Preliminary steps in this direction are being taken by the Community Colleges.
022	6	Continuous evaluation of an institution should result in considerable impact on all connected with it.
023	2	Little new here beyond what is already availble.
048	2	Educators will "beat the system" 1) by establishing broad (and vague) criteria and 2) by evaluating each other.
053	2	Performance evaluations will effect little change in quality without large financial outlay.
087	1	I doubt that the people are affected much by institutional accreditation procedures.
101	7	Everything would change dramatically if we could really evaluate educational performance.

IMPACT QUESTION

CHANGE STATEMENT 4

The total number of degree programs in undergraduate and graduate professional training at the four State Colleges will increase 10-30%.

Code No.	Response	Comment
003	6	As the colleges seek to maintain enrollment, they will keep trying to develop programs to attract and serve a greater variety of students.

IMPACT QUESTION (CONTINUATION) CHANGE STATEMENT 4

Code No.	Response	Comment
010	7	It isn't going to happen. The tendency of the academic degree to slide downward in prestige and meaning will be reversed by both the demands of society and the deliberate action of the educational system. Open admissions, college-level courses in dish-washing, sending 75 percent of young people to institutions established for an intellectual elite, will be eliminated. But there will be a rising tendency to give academic credit for work experience, making it possible for a person who never earned a bachelor's degree is a prerequisite.
015	1	I assumed most of these services will be financed by state and federal funds which should not affect student tuition directly.
022	5	I am choosing 10% as the limit, but even this will broaden the programs and thus have a high impact.

IMPACT QUESTION CHANGE STATEMENT 5

Supportive Programs (such as counseling services, day-care centers, and scholarship programs) will be key factors in per-student-cost calculations.

Code No.	Response	Comment
003	6	Counseling and day-care are already taking an increasing importance.
022	6	Such programs can't help but be demanded and costly---their impact will thus be considerable.
023	3	There has to be some impact due to cost factor, but not much.
032	7	New and improved programs, the effective use of more modern teaching tools and production, more knowledgable faculty and administration.

IMPACT QUESTION (CONTINUATION) CHANGE STATEMENT 5

Code No.	Response	Comment
033	2	The dollars won't change---cost of such services is, in fact, a part of such costs now.
053	2	Much of the costs of supportive services will have to be borne by the federal government, hence cost-per-student calculations to the state will be modest.
080	3	With the pressure on costs, it may be hard to maintain programs in these areas.
098	6	These extra costs will have to be borne by consumers, if able. Present system of showering subsidies from State sales tax on everyone in the form of low-cost post high school education must be corrected.
101	2	These factors have little to do with education unless we would very substantially modify counseling.

IMPACT QUESTION CHANGE STATEMENT 6

Planning and coordination of the functions and missions of higher education institutions will be carried out with a major emphasis on regional cooperation.

Code No.	Response	Comment
053	3	Present regional cooperation is extensive. What more which will be done will be modest.
087	2	There would probably be a much greater impact if such planning and coordination doesn't occur.
098	1	Since the Task Force of 1971 on Financing H. Ed., people have been demanding CHE assume coordinating and planning control of various B of T's.

IMPACT QUESTION — CHANGE STATEMENT 7

State funding of higher education will achieve a "per full-time-equivalent" student support level equal to to the 75th percentile among the fifty states.

Code No.	Response	Comment
023	7	Everyone understands money.
048	7	I am guessing that Conn. is well below the 75th percentile, but I really don't know.
101	3	Not terribly relevant to educational quality.

IMPACT QUESTION — CHANGE STATEMENT 8

Over 40% of all programs offered by proprietary and other non-degree granting institutions will be eligible for "college credit".

Code No.	Response	Comment
031	7	These will be recognized in some way but will never receive "college credit" unless through challenge examinations.
003	3	As we move into accreditation of proprietary schools it seems a smaller number than expected may be ready to apply for accreditation, thereby becoming eligible for college credit.
022	3	The number of students involved who will be eligible for transfer of credit does not appear to be many - thus a "below quartile" mark.
023	7	Use of word proprietary misleading. They need not be without credit. However, credit for non-traditional education is coming and this can have a tremendous impact when career training is accepted for degree credit through in-plant education.
033	3	I don't think we'll lose that many students, who attend schools for image purposes, or financial reasons.

IMPACT QUESTION (CONTINUATION) CHANGE STATEMENT 8

Code No.	Response	Comment
053	3	As credits are earned in proprietary and non-degree granting institutions colleges need not expand - as they are not doing now.
061	6	Probably will be so because many "leaders" want it to be so, and because "technical training" as opposed to liberal arts is being thought of as satisfactory for a college degree for students from poorer families.
078	7	I can only conclude that I misread this statement on the first round. Again, the effect on the educational establishment would be very great.
101	2	I just don't see that it makes much difference.

IMPACT QUESTION CHANGE STATEMENT 9

Almost 5% of all degrees granted annually in the state will be awarded by the Board for State Academic Awards.

Code No.	Response	Comment
015	7	Since the Board was recently organized it would seem reasonable for them to offer 5% of the degrees by 1980.
023	2	No one really cares who gives the degree so long as they get it.
032	7	This will have an impact on the type of student in the college, i.e. there will be a drain on the overall pool of college age students.
053	2	It doesn't matter much how degrees are earned or awarded.

IMPACT QUESTION

CHANGE STATEMENT 10

The distinction between Adult Education and Continuing Education in terms of clientele and programs will be virtually nonexistent.

Code No.	Response	Comment
015	7	As more people continue life-time education, classes are expected to become mixed with all age groups in higher education.
022	6	I think this is very true---I feel that thousands of people will be involved---such involvement by this number is an item of high impact.
023	6	People want recognition, degrees provide the labels.
032	7	The students now attending adult classes put on by the local school system will shift to the college campus, thus opening up a new student pool of a higher education.
033	1	The distinction is virtually nonexistent on this campus now.
048	7	If it becomes the "rule" that people move freely into and out of higher education throughout their lives, the impact on institutions and society will be profound.
061	2	Doesn't matter much now.
078	2	Perhaps, I misunderstand, but I find little meaning in this statement.

IMPACT QUESTION

CHANGE STATEMENT 11

The effective implementation of "affirmative action" aimed at increasing and maintaining diversity in admissions, employment, and program content areas will be standard operating procedure in all public colleges.

IMPACT QUESTION (CONTINUATION) CHANGE STATEMENT 11

Code No.	Response	Comment
048	3	There will be routine affirmative action programs, but they will have to be "non-discriminatory", which means that historical inequities will persist. The impact will be modest except for non-minority women.
061	1	The "systems management" concept is basically a drive toward "machines to make machines and standardization of parts". To the extent it is successful, this proposal becomes decreasingly meaningful.
098	3	Minimal impact unless comparable efforts are made in elementary and secondary systems.

IMPACT QUESTION CHANGE STATEMENT 12

The rate of growth for part-time undergraduate enrollments (including all age categories) will exceed that of full-time undergraduates.

Code No.	Response	Comment
003	7	Part-time enrollments in our area seem to be increasing even more rapidly than anticipated. This fits a new life style and a new attitude toward education.
023	2	On a 7-point (impact) scale, 2 is very low. However, we've almost reached this point already.
033	2	We presently deal with part-time and full-time on some basis---all that will change will be proportion.
053	3	Students are students.

IMPACT QUESTION

CHANGE STATEMENT 13

An equitable transfer system, operating between all public and cooperating private institutions will be in common use by large numbers of students (50% or more) on the community college level.

Code No.	Response	Comment
003	6	I think we are well on the way to an equitable transfer situation between institutions, especially community colleges and state four-year institutions. Private colleges are becoming increasingly hospitable to transfer students.
022	6	This transfer idea will be important to a lot of people and have considerable impact.....
053	2	Transferring students are still students.
061	3	Private colleges are concerned with "survival" and "cooperation" in their interpretation will remain a one-way street.
096	6	Impact great on larger private colleges who value their selectivity---will take a lot of student pressure for this to come about.

IMPACT QUESTION

CHANGE STATEMENT 14

The state higher education system (public and private) will be able programmatically to accommodate over 75% of the college-age (18-21 year olds) population.

Code No.	Response	Comment
003	6	Number of college age students is decreasing, space available is increasing. Many institutions have overbuilt.
022	2	I may not understand this question -- but programs in "higher education" and "75% of college age population" don't appear to be logical sequential statements are 75% of the population capable of benefiting from higher education.

IMPACT QUESTION (CONTINUATION) CHANGE STATEMENT 14

Code No.	Response	Comment
023	2	With use of State Academic Awards and other types of credit, this is already possible.
033	3	Programmatically we can accomodate them now.
048	7	I think the percentage-age is much lower now.
053	3	They are able to be accommodated, if they desire to participate.
059	6	Degrees will be cheapened -- their possessors had more-than-average ability and development of these abilities. If 75% or more are run through the mill, obviously the degree will no longer mean "better-than-average".
089	7	A greatly increased budget to accomodate increased enrollment.

IMPACT QUESTION CHANGE STATEMENT 15

Work experience related to program content will receive academic credit in all public and most private schools and colleges.

Code No.	Response	Comment
022	3	The percentage of students able to secure work experience that is worth academic credit is very small -- thus the impact is not great.
023	7	A necessity not yet faced by academicians.
048	7	That will mean a radical change in the concept of higher education.
053	2	Credit is credit. If quality is controlled there will be little impact except perhaps in an increase in off-campus affiliations, etc.

IMPACT QUESTION (CONTINUATION) CHANGE STATEMENT 15

Code No.	Response	Comment
080	3	This may happen, but I think it will come more slowly as the difficulties of credentialling become more apparent. The statement is too extravagant for me.

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